Pacific Salmon Commission

2001/2002 Seventeenth Annual Report

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Pacific Salmon Commission

Established by Treaty between Canada and the United States March 18, 1985 for the conservation, management and optimum production of Pacific salmon

Seventeenth Annual Report 2001/2002

Vancouver, B.C.
Canada

March, 2003

PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 – 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE: (604) 684-8081
FAX: (604) 666-8707

Our File:

Your File:

Letter of Transmittal

In compliance with Article II, Paragraph 14 of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific salmon, it is my pleasure as Chair of the Pacific Salmon Commission to present my compliments to the Parties and to transmit herewith the Seventeenth Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 2001 to March 31, 2002.

On June 3, 1999 the Parties signed a comprehensive long-term agreement under the Pacific Salmon Treaty. The agreement established abundance-based fishery regimes for the major interception fisheries in the United States and Canada. The arrangements are all for ten years, except those for Fraser River sockeye and pink salmon, which are for 12 years. The agreement also established two bilaterally-managed regional funds, and included provisions to enhance bilateral cooperation, improve the scientific bases for salmon management and apply institutional changes to the Pacific Salmon Treaty. A summary of the agreement is available on the PSC website: www.psc.org.

Reports on the results of the 2001 fishing season presented by the Parties and on meetings of the Commission, the Standing Committee on Finance and Administration and the Northern and Southern Fund Committee are presented in summary. Executive summaries of documents prepared by Pacific Salmon Commission staff and the joint technical committees during the period covered by this report are also presented.

The Auditors' report on financial activities of the Commission during the fiscal year April 1, 2001 to March 31, 2002, as approved by the Commission, is also included in this report.

Yours truly,

Larry Rutter

L. Rutter
Chair

PACIFIC SALMON COMMISSION

OFFICERS for 2001/2002

Chair	Larry Rutter
Vice-Chair	Donna Petrachenko

COMMISSIONERS

United States	Canada
Ron Allen	Ron Fowler
Kevin Duffy	Hubert Haldane
Curt Smitch	Gerry Kristianson
Rollie Rousseau	Rich Chapple
Donald Sampson	Garnet Jones
Jev Shelton	Russ Jones

SECRETARIAT STAFF

Executive Secretary	Mr. Don Kowal
Administrative Officer	Mr. Ken Medlock
Chief Biologist	Mr. Jim Woodey

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INTRODUCTION

Interception of Pacific salmon bound for rivers of one country in fisheries of the other has been the subject of discussion between the Governments of Canada and the United States of America since the early part of this century. Intercepting fisheries were identified through research conducted by the two countries on species and stocks originating from Alaska, British Columbia, Washington, Oregon and Idaho. The results of this research identified that Alaskan fishers were catching salmon bound for British Columbia, Idaho, Oregon and Washington. Canadian fishers off the West Coast of Vancouver Island were capturing salmon bound for rivers of Washington and Oregon. Fishers in northern British Columbia were intercepting salmon returning to Alaska, Washington, Oregon and Idaho, and United States fishers were catching Fraser River salmon as they traveled through the Strait of Juan de Fuca and the San Juan Islands towards the Fraser River.

Management of stocks subject to interception became a matter of common concern to both Canada and the United States. A mechanism to enable the countries to reap the benefits of their respective management and enhancement efforts was required. That mechanism is now provided through the Pacific Salmon Treaty, which entered into force upon the exchange of instruments of ratification by the President of the United States of America and the Prime Minister of Canada on March 18, 1985.

The Pacific Salmon Commission, guided by principles and provisions of the Treaty, establishes general fishery management regimes for international conservation and harvest sharing of intermingling salmon stocks. Each country retains jurisdictional management authority but must manage its fisheries in a manner consistent with the provisions of the Treaty. Implementation of the principles of the Treaty should enable the United States and Canada, through better conservation and enhancement, to prevent overfishing, increase production of salmon, and ensure that each country receives benefits equivalent to its own production. The Commission also serves as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The organizational structure of the Commission is currently focused on four geographically oriented panels. The terms of new Treaty arrangements signed by the Parties in June, 1999 provided for the creation of a new Transboundary Panel. The Transboundary Panel's stocks of concern originate from the Alsek, Stikine and Taku River systems. The Northern Panel's stocks of concern are those which originate in rivers situated between Cape Suckling in Alaska and Cape Caution in British Columbia. The Southern Panel's stocks of concern are those which originate in rivers located south of Cape Caution, other than Fraser River sockeye and pink salmon. The Fraser River Panel has special regulatory responsibilities for stocks of sockeye and pink salmon originating from the Fraser River.

The functions of panels are to review annual post-season reports, annual pre-season fishing plans, and ongoing and planned salmonid enhancement programs of each country and to provide recommendations to the Commission for development of annual fishery regimes in accordance with the objectives of the Treaty. These plans, once adopted by the Commission and the governments, are implemented by the management agencies in each country.

The Fraser River Panel, in addition, has been accorded special responsibility for in-season regulation of Fraser River sockeye and pink fisheries of Canada and the United States in southern British Columbia and northern Puget Sound, in an area designated as Fraser River Panel Area Waters. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

Negotiations designed to lead to agreed fishery regimes were conducted at the government-to-government level commencing in the spring of 1998. A comprehensive agreement was reached by the Parties on June 30, 1999.

As a result of the agreement, long-term fishing arrangements are in place for ten years, except for Fraser River sockeye and pink salmon which is a 12 year arrangement.

With fishery arrangements in place, the meeting agendas for the Commission have concentrated on implementation of the elements of the new arrangements that will improve fisheries management and aid the countries efforts to recover weakened stocks. These provisions include establishment of two bilaterally-managed restoration and enhancement funds, provisions to enhance bilateral cooperation, improving the scientific basis for salmon management and applying institutional changes to the Pacific Salmon Commission.

The Commission meets at least once annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 2001 to March 31, 2002, the Commission met on four occasions:

1. Commission Extraordinary Executive Session
   June 27, 2001 – Vancouver, B.C.

2. Commission Executive Session
   October 16-18, 2001 – Juneau, Alaska

3. Post-Season Meeting of the Commission and Panels
   January 7-11, 2002 – Portland, Oregon

4. Seventeenth Annual Meeting of the Commission
   February 11-15, 2002 – Vancouver, B.C.

This, the Seventeenth Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its Seventeenth fiscal year of operation, April 1, 2001 to March 31, 2002.

Activities of the Commission

PART I
ACTIVITIES OF THE COMMISSION

A. EXTRAORDINARY SESSION OF THE PACIFIC SALMON COMMISSION
June 27, 2001 – Vancouver, B.C.

At the opening of the Extraordinary Session, which was called to deal with issues concerning Fraser River fisheries, Mr. Russ Jones was introduced as the newly appointed Canadian Commissioner.

The session began with a discussion of the late-run Fraser River sockeye initiative.

The Executive Secretary provided a summary of responses that had been received to date to a letter written by the Commission Chair to the Parties expressing concern about the problems associated with late-run Fraser River sockeye. The letter proposed that a meeting be held in July 2001 to discuss late-run problem and its implications. The Commission had received replies from all Parties contacted. The U.S. Departments of Interior and Commerce had named representatives to attend the proposed meeting, as had the Canadian Departments of Fisheries and Oceans and Foreign Affairs. The U.S. State Department had not named a representative to attend the meeting but committed $50,000 towards researching the late run problem.

The Commission moved on to discuss the Fraser River Bilateral Fishing Plan. It heard a report from the Chair and Vice-Chair of the Fraser River Panel in which it was explained that the Panel had not yet agreed to a fishing plan for the 2001 season. The Panel asked the Commission for direction on the early summer-run sockeye management strategy; the conservation strategy for late-run sockeye; the identification of the TAC (total allowable catch) calculation for international sharing purposes; and on resolving process problems that the Panel had experienced in the spring.

After a lengthy discussion the Commission passed the following motion:

1. Recognizing that with respect to Fraser River sockeye for 2001 the primary concern of the Commission is the high mortality of late run sockeye, the Commission instructs the Fraser River Panel to develop a fishing plan so that:

   - the Parties' fisheries do not exceed a 17% exploitation rate on late-run sockeye. The United States obligation with respect to the 17% is to manage its fisheries so as not to exceed 17% x 18.4% of the late-run sockeye;

   - and the Parties' fisheries do not exceed a 60% harvest rate on summer-run sockeye.

2. The United States share will not be adjusted post-season as a consequence of Canadian domestic policies that result in Canada not achieving her 81.6%.

3. The Commission further directs that the Fraser River Panel prepare a report in the fall of 2001 to the Commission to recommend procedures for the future designed to

ensure appropriate coordination between the bilateral Fraser River Panel and domestic pre-season planning processes.

B. EXECUTIVE SESSION OF THE PACIFIC SALMON COMMISSION
October 16-17, 2001, Juneau, Alaska

The Commission met twice in Executive Session at this meeting.

The Parties exchanged their slate of officers for 2001/2002 and agreed to exchange post-season reports by November 30, 2001.

The Commission agreed that the Finance and Administration Committee would examine the proposed dates for the 2003/2004 meeting cycle and report back to the Commission in January with recommendations. After further discussion, the Commission agreed to hold the October 2002 Executive Session in Kamloops, British Columbia.

A review was given by the Ad Hoc Committee on Habitat Form and Function about the progress made on the habitat issue. Canada had completed a draft of its tier one and tier two reports for all stocks subject to the Treaty. Canada had also completed its tier three report on Okanogan sockeye. It was emphasized that these reports were preliminary, draft reports.

The Commission agreed that the U.S. would complete its draft reports within two weeks. These reports, along with those compiled by Canada, would be forwarded to Commissioners and to all members of the Ad Hoc Committee on Habitat Form and Function and to the Committee on Scientific Cooperation (CSC) prior to a workshop that would be scheduled for November. At the workshop, the CSC and the Ad Hoc Committee would discuss the technical aspects of the reports and develop recommendations that would be submitted to the Commission for consideration. In addition, a small group of Commissioners would meet to discuss the policy implications of the draft reports. Recommendations would be developed which would help formulate the discussion about the habitat issue at the January 2002 Commission meeting.

The Committee on Scientific Cooperation presented an update on the progress it had made completing its assigned tasks. It was involved in studying the late-run Fraser River sockeye issue and was very concerned about the potential seriousness of the problem. The CSC would participate in the Late-Run Fraser sockeye workshop that would be held in Vancouver on November 5 and 6, 2002. The CSC would report to the Commission at the January 2002 meeting on the recommendations forthcoming from the workshop.

The CSC reported that it had not yet received the work plans of the technical committees. Therefore, it had not yet made progress on its task of reporting on the Commission's scientific agenda. The Committee proposed that it meet with the co-chairs of the technical committees and report back to the Commission at the February 2002 meeting.

On the issue of Dispute Resolution, the Commission agreed that Canada would forward proposals, consistent with the discussions that had been held to date, about how a technical dispute board might operate. Once the Commission had discussed and refined the proposals, the Commission would move on to deal with other necessary components of the technical dispute process. Canada would present a paper on dispute resolution for bilateral discussion at the January 2002 meeting.

The Commission received an update from the Northern and Southern Endowment Fund Committees.

The Northern Fund Committee had developed a Request for Proposal (RFP) process. It had hoped to fund some pilot projects in 2001, but due to the economic downturn there was not enough money available to do so. Therefore, the State of Alaska had agreed to fund the Tuya River pilot project in the summer of 2001.

The Southern Fund Committee reported that it would soon review a draft report on its policy/procedures for expenditures but due to the economic downturn, it appeared that little would be done in terms of funding projects in 2002.

Both Fund Committees would meet with the fund managers hired to invest the endowment funds in Vancouver on November 28, 2001 when Committee members would be able to review the managers' performance to date.

The committee charged with hiring a Fund Coordinator hoped to forward the name of the successful candidate to the Commission within the following month.

The Commission discussed and accepted the set of guidelines governing the approval of Commission Executive minutes developed by the Editorial Board.

The Commission received a paper from the bilateral committee that was struck to scope out how to review the Commission's ability to deal with issues surrounding chinook, including data collection. The committee consisted of Mr. Sprout, Mr. Pipkin and Mr. Duffy. The paper contained recommendations about how an assessment might be performed. Key members of the Commission, including technical committee members, panel members, and others identified by the Commission, would be interviewed and would provide advice that would form the basis of a report. The committee also proposed that the Commission prepare a questionnaire that would be circulated to the agencies. Terms of reference, objectives and methodology were proposed. The group recommended that the Commission hire a consultant to fulfill the terms of reference, carry out the survey, and make the assessment consistent with the terms of reference.

In order to accelerate the process, the U.S. recommended that Commission hire a consultant before the January 2002 meeting. At the January meeting the consultant could hold discussions with key individuals. A draft report would be written by the consultant and reviewed by the CTC. A final report would be presented to the Commission at its February 2002 meeting. Canada agreed and the Executive Secretary was directed to forward a list of two or three consultants to a small committee of Commissioners who would make the final selection.

The Commission heard a brief overview of the work undertaken by the bilateral southern coho negotiating team. Three meetings had been held since February 2001 during which substantial progress had been made. The team would hold its next negotiating session before the January 2002 session.

The Commission had received work plans from the Fraser River Panel, the Northern Panel, the Transboundary Panel, the Committee on Scientific Cooperation, the Chinook Technical

Committee, the Selective Fisheries Evaluation Committee, and the Data Sharing Technical Committee. These work plans were discussed and accepted by the Commission.

The Southern Panel was directed to complete its post-season report.

It was pointed out that it would be difficult for the Coho Technical Committee to come forward with a work plan because there was an active coho negotiation underway.

The Chum Technical Committee was directed to submit annual reports for the 1999, 2000, and 2001 seasons.

The Commission discussed several letters that it had received about the potential effects of the Tulsequah Chief Mine project. It was agreed that an analysis had to be done to determine what role, if any, the Commission had regarding the issues raised in the letters. The Commission would submit copies of the letters to the Transboundary Panel Chair and Vice Chair for information purposes. The Commission would discuss the item more fully at its January 2002 meeting.

The Parties appointed representatives to serve on the hiring committee for the Commission's Chief Biologist. The U.S. named Mr. Mike Grayum and Mr. Dave Cantillon. Canada named Dr. Richard Beamish and would forward a second name at a later date.

C. MEETING OF THE COMMISSION AND PANELS
January 7 - 11, 2002, Portland, Oregon

The Commission met three times in Executive Session during this meeting period.

Mr. Garnet Jones was introduced as the newly appointed Canadian Commissioner.

The Parties exchanged final post-season reports (details are provided in Section VI of this report).

The Finance and Administration Committee tabled its report which included the budget for fiscal year 2002/2003. The Committee presented a formal schedule of meetings through 2004 with the location of the 2003 October Executive session the only item yet to be determined. The Commission adopted the Committee's report.

An update was given on the progress of the team negotiating a new coho agreement. The process had changed in that a smaller group was now carrying out the negotiations. The group had met several times but did not yet have a regime to recommend to the Commission for adoption. Further meetings were scheduled.

The Committee on Scientific Cooperation presented a report of its activities which focused upon late run sockeye, technical committee workplans, and advice on non-fishing factors.

Long-time Chinook Technical Committee (CTC) members Mr. Jim Scott, Mr. Dave Gaudet, and Dr. Brian Riddell appeared before the Commission. All three were leaving their positions on the CTC. The Commission formally thanked them for all of their work

and acknowledged the extraordinary value that they had brought to the Commission process throughout the years. Each was presented with a certificate of appreciation.

The Commission held an in-camera session to review PSC structures, a standing agenda item.

At the second Executive Session, Canada introduced a draft paper entitled "Technical Dispute Settlement Board: Rules and Procedures." The paper described rules and procedures that could be used in the formation of a Technical Dispute Settlement Board (TDSB). The U.S. reviewed the paper and it was found that the Commission was not yet in a position to come to a final agreement on the dispute resolution issue. A small bilateral group of Commissioners was given the task of further refining the document which would be considered again at the Commission's February 2002 meeting.

The Commission heard a presentation by PSC staff entitled "Early Upstream Migration of Late-Run Fraser River Sockeye Salmon: Update for 2001". The upcoming January 2002 workshop, during which projects designed to examine both management issues and scientific issues would be reviewed, was discussed.

The Southern Endowment Fund Committee presented an update of its activities entitled "Southern Boundary Restoration and Enhancement Fund: Overview and Fund Status." The Commission was also given an update on the activities of the Northern Fund Committee.

Mr. Rick Applegate was introduced as the consultant hired to advise the Commission about issues surrounding chinook. Mr. Applegate provided an update on how the review was progressing. He began to work on the contract in late-December and had interviewed approximately 18 people to that point. He had also held fairly extensive sessions with current, past and in-coming chairs of the CTC. He would interview more people and conduct several follow-up interviews with several key individuals.

Mr. Applegate provided an outline of some of the topics that had been brought forward during the interviews. Mr. Applegate reported that he would try to identify the most critical issues and make recommendations in his final report which would be presented to the Commission in February.

The Commission discussed the lack of progress that had been made to date on the implementation of the Habitat Agreement. It was agreed that there were a variety of opinions on how to discharge the habitat obligation. The US would draft a paper that would outline what the Agreement meant from its perspective and what it thought would be needed to implement the Agreement.

Canada volunteered to draft a forward-looking agenda for the Commission that would indicate which agenda items were updates, which were for discussion, and which were action items. Canada would also draft a list of tasks that remained unfinished from the 1999 Agreement.

It was announced that the meeting was officially Mr. Sprout's final meeting as a Commissioner. Commissioners thanked him on behalf the United States, Canada, and the Commission for all of his work and for the contributions that he had made to the Commission process over the years. He was presented with a commemorative plaque.

Before the session was adjourned, it was noted that a plenary session would be held at 2:00 PM.

The plenary session was held on the afternoon of Thursday, January 10, 2002.

The session began with the introduction of the Commissioners.

Mr. Rutter, Commission Chair, provided a summary of the items that the Commissioners had addressed during the session. This was followed by reports from Mr. Dave Gaudet, Chair of the Northern Panel, Mr. Mr. Andy McGregor, Chair of the Transboundary Panel, Mr. Rich Lincoln, Chair of the Fraser River Panel, Mr. Terry Williams, Chair of the Southern Panel, Dr. Brian Riddell Co-Chair of the Chinook Technical Committee, and Dr. Gary Morishima, Co-Chair of the Selective Fisheries Evaluation Committee. Each provided an overview of the work that their respective panels or committees had accomplished during the meeting.

It was announced that Mr. Jim Scott, Mr. Dave Gaudet and Dr. Brian Riddell were leaving the Chinook Technical Committee. The Commission expressed its thanks for their efforts.

Mr. Rutter announced that Mr. Paul Sprout was leaving his position with the Commission. It was noted that Mr. Sprout had served the Commission for many years in the capacity of Northern Panel Chair, Southern Panel Chair and Commissioner, and that he played a vital role in the negotiations that led to the 1999 Agreement. The Commission thanked him for his contributions and wished him the best in the future.

D. PACIFIC SALMON COMMISSION ANNUAL MEETING
February 11 - 15, 2002, Vancouver, B.C.

The Commission met seven times in bilateral Executive Session during this meeting. At the first sitting, Dr. John Davis of Canada Fisheries and Oceans was welcomed to the Commission process.

The Commission heard an update from the group working on dispute resolution. After several discussions it was clear that Canada was not in a position to move forward until it had the opportunity to hold further internal consultations. It was agreed that the issue would be revisited at the October 2002 session.

The PSC Secretariat staff gave a presentation entitled "2001 PSC funded studies on early migration of Late-run Fraser sockeye: 3rd PSC Workshop on the Late-run issue, held January 30-31, 2002." The presentation included an overview of the methods and the results of seven pilot studies that were funded by the Pacific Salmon Commission to investigate the late-run problem.

The Committee on Scientific Cooperation (CSC) presented a report entitled "Advice on Late Run Fraser Sockeye" in which the Committee put forth recommendations for funding projects to further study the late run sockeye problem. The Commission agreed to endorse the scientific investigation recommended by the CSC.

The Selective Fisheries Evaluation Committee (SFEC) gave a presentation based on its written report, "AWG (Analytical Work Group) Report on Methods for Estimating Unmarked Incidental Mortalities in Mark-Selective Fisheries". The presentation included an overview of the basics of Mark Selective Fisheries (MSF), the objectives of the SFEC, a summary of the contents of the SFEC-AWG report, the report's general conclusions, the SFEC's recommendations about how the Commission should deal with mass marking and MSF proposals, and a description of the type of information that should be included in these proposals.

The Commission passed a motion in which the SFEC was instructed to develop recommendations for a protocol and a process for reviewing proposals for mass marking and mark-selective fisheries.

A special sitting of the Commission was held to hear Mr. Rick Applegate present an overview of his report, "A Review of Pacific Salmon Commission Chinook Activities". Members of the Chinook Technical Committee (CTC) were in attendance. Commissioners and CTC members commented upon the presentation. Some members of the CTC expressed concerns about the report and cautioned the Commission about making changes without first collaborating with the CTC.

The Commissioners discussed the Applegate report in several subsequent sittings. The Commission went on record as saying that the Applegate report served its purpose by catalyzing the discussion but the report would have no standing and would not be formally adopted by the Commission.

Several members of the CTC presented a set of recommendations about improving the Commission's performance on chinook. In response to the recommendations, the Commission approved in principle the establishment of a small policy-technical interface group that would work on issues surrounding chinook. The Commission Chair and Vice-Chair were authorized to begin working out the appropriate details of how the group would function.

The CTC made several additional presentations to the Commission including one entitled "Establishing Lower Bounds" using the 'risk-based' approach". The CTC also provided the Commission with a letter that gave background information on lower bounds. The Committee presented a letter about "Chinook Technical Committee Recommendations for Overage/Underage" and a technical appendix entitled ""Selected Technical Background for Overage/Underage Letter to PSC Commissioners dated February 12, 2002."

Extensive discussions were held about chinook escapement goals, lower bounds, and the overage/underage policy.

It was reported that the U.S. had not been able to prepare an issue paper on habitat in time for the meeting. The U.S. agreed to prepare a paper and present it at the October 2002 Executive Session.

Canada distributed a draft forward-looking agenda for discussion purposes. The Commission adopted the policy that it would have a three-meeting forward-looking agenda available on the Commission website at www.psc.org.

The Finance and Administration Committee reported that the most substantive issue that it had to address was the investigation into the Fraser River late-run sockeye problem and the recommendations of the Committee on Scientific Cooperation. Dr. Davis, on behalf of Fisheries and Oceans Canada, agreed to develop the CSC's paper into a working plan complete with a listing of the amount of money required to carry out the CSC's recommendations. A conference call would be scheduled to discuss follow-up steps once the working plan was complete.

After a site inspection, the Finance and Administration Committee recommended that the Commission hold its January 2003 meeting at Vancouver's Sheraton Wall Centre. The Commission adopted the Committee's recommendation.

The Commission formally adopted the Coho Management Plan (see Appendix A). The work of many people was acknowledged with special mention going to Mr. Paul Macgillvary of Canada and Dr. Gary Morishima of the U.S. The formal Coho Agreement was tabled and a small work group was struck to format the Agreement for transmittal to the Governments.

Canada tabled the 2001 Report on the Salmonid Enhancement Program in British Columbia. The U.S.'s enhancement report would be tabled as soon as possible. (See Part IV, Section D of this report).

The Commission discussed the proposed Tulsequah Chief Mine on the Taku River and its potential impacts on fisheries.

The Fraser River Panel reported that it required guidance from the Commission on two issues. The Panel Chair and Vice Chair briefly framed the issues, both of which related to sockeye Total Allowable Catch (TAC) calculations.

The first problem arose in 2000 with respect to the post-season TAC calculation when the expected in-River catch above Mission provided for in the gross escapement number was not taken. The same situation occurred in 2001 and there was a concern that it would continue to be a problem in the future. The Panel also required advice on the 2001 sockeye TAC. There were different interpretations of the agreement that the Commission came to at its extraordinary meeting on June 27, 2001 and the Panel was having difficulty determining how allowable impacts on late-run sockeye should be shared.

The Commission agreed to hold a special session in April to address the Fraser River issues before the beginning of the 2002-fishing season. The Panel was directed to continue with pre-season planning prior to the special Commission session.

The Commission met in a plenary session at 9:30 AM on February 15. Mr. Mike Lapointe of the PSC Secretariat Office delivered the presentation on the "2001 PSC funded studies on early migration of Late-run Fraser sockeye" that was given to the Commission in an earlier session. Commission Chair Larry Rutter summarized the business conducted by the Commission during the session which included an announcement that the Coho Agreement had been formally adopted.

Activities of the Standing Committees

PART II
ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

1. Committee Activities

The Committee met on November 20, 2001 in Vancouver, B.C to consider a range of financial and administrative issues. The Committee's deliberations focused primarily on a review of the Commission's current financial status, budget proposals for FY 2002/2003 and a budget forecast for FY 2003/2004 and beyond.

The Committee approved the Commission budget at the contribution level of $1,346,738 per party with expenditures of $2,798,496. This represents an increased contribution per party over last year of $167,738. The Committee recommends acceptance of this budget. The new budget does not provide for any additional programs in 2002/2003. The Committee also agreed to review the revolving test fishing fund each year and to establish a maximum for the fund next year.

The Committee also reviewed staff projections of expenditures for the balance of the current fiscal year. The staff reported a carryover of $90,000 to next year. However, additional DNA work has been identified but will not be completed until the next fiscal year. It is therefore recommended that the $90,000 carryover from 2001/2002 be carried to fiscal 2002/2003 to offset costs of programs initiated in this fiscal year.

The Committee also approved the hiring of a consultant to report on the Chinook Technical Committee processes. This unbudgeted expenditure will be paid from the Working Capital Fund. If the General Fund carryover exceeds the forecast $90,000 the expenditure will be charged to the extent possible to the General Fund.

The Committee reviewed the Commission's hospitality policy, recognizing the value of this item. As such it was agreed that coffee at the major meetings would be provided as in the past but only until noon each day. A modest reception, with a small cost to attendees and with a cash bar would be planned for annual meetings.

The Committee reviewed the projected budgets for 2003/2004 and 2004/2005. Canada indicated that funding above 2002/2003 may be difficult. Staff was requested to organize an in-camera session for Commissioners at the January meeting of the Commission to review the direction of the continuing programs and related costs. Included in their discussion would be to review initiatives to fund the research on the Early Arrival of Late Run Fraser River Sockeye.

The Committee also received, from the United States, recommendations for locations for the October, 2003 Executive Session. Staff was requested to pursue investigation of these proposals. It was approved that the post-season meeting be held in Portland, Oregon, January 12-16, 2004 and the Annual meeting be in Vancouver, B.C., February 9-13, 2004. Staff was requested to explore using other hotels in Vancouver for this meeting. The Executive Session proposed for October 19-21, 2004 would be Canada's choice and Canada agreed to recommend locations.

This completes the report of the Standing Committee on Finance and Administration. The Committee is pleased to recommend adoption of this report by the Commission.

2. Secretariat Staffing Activities

A list of Secretariat staff employees as of March 31, 2002 is presented in Appendix D.

During the last year the staff changes that have occurred are:

Mr. Pieter Van Will left the staff and Ms. Christine Tovey was hired as his replacement to fill the Test Fishing Biologist position. Douglas Stelter and Dr. J.C Woodey retired after over 33 years and 30 years respectively. Mr. Mike Lapointe replaced Dr. Woodey as Chief Biologist. Mr. Angus Mackay joined the staff as the Fund Coordinator for the Northern and Southern Endowment Funds. Ms. Sandra Wadley was added to the staff as an Information Technology Support Specialist.

An updated membership list for panels, standing committees, joint technical committees and ad hoc working groups as of March 31, 2002 is presented in Appendix E.

B. MEETINGS OF THE STANDING COMMITTEE ON SCIENTIFIC COOPERATION

The Committee worked by primarily by correspondence and conference call from February to October 2001. In addition, some CSC members participated in an information session on late-run sockeye, held at Commission headquarters on July 25, 2001.

In 2001 the Committee assisted the Commission in reviewing scientific proposals that were submitted for funding. The Committee participated in a fall workshop sponsored by the Commission where scientific results from 2001 were presented and plans developed for 2002. The Committee reported to the Commission in February with the following advice on late run Fraser Sockeye:

The CSC's advice on late-run sockeye was formulated in conjunction with the PSC-sponsored workshop held in Vancouver on January 30-31, 2001. At the workshop, investigators reported on new Commission-sponsored and DFO-sponsored studies that were completed in 2001. Although the scientific team has made progress, the team was not able to discover the mechanism responsible for the early return of late-run sockeye to the Fraser River.

In its previous report, the CSC had identified the early return of late-run Fraser sockeye as a potentially serious concern for the future of the Fraser sockeye resource. Continued research on late-run sockeye is now required from two perspectives. First, research is urgently needed to address the appropriate fishery management actions under the assumption that this new pattern of sockeye behavior will continue. Second, multi-year research must address the environmental causes and physiological explanations for the change in behavior. The CSC anticipates that only a portion of this research can be completed in 2002, due to funding constraints and the complexity of the problem. Furthermore, quick decisions on 2002 and ongoing studies are needed, because of the delivery time for obtaining tags and the advance notice required for scheduling vessels.

Based on the results to date, the CSC advises that a full understanding of the causes for change in behavior of late-run sockeye will require a multi-disciplinary approach on a complex of factors. The scale and scope of a research effort required to answer these questions is likely beyond the capability of any single agency. Consideration should be given to engaging other agencies in this problem in order to expand the scale of possible research on late-run sockeye and on other salmon species in the Fraser system. The CSC recommends that DFO take the lead in developing an international request for proposals (RFP) for work to be carried out in 2003-2008, and that DFO administer the project. A source of long-term funding will need to be identified. The southern endowment fund is one potential source for later years of the project.

For 2002, the CSC advises that an allotment of approximately CDN $1M could address fishery management-related research, while conducting other mechanistic studies at a minimal level. These costs are additional to ongoing Fraser sockeye projects conducted routinely by DFO and by the Commission. A more complete study in 2002 could cost as much as CDN $1.5 to $2.0M.

For 2002, the CSC reiterates its earlier recommendation that highest priority be given to freshwater tagging studies on the Adams sockeye run. Tagging studies in the lower Fraser and in the Thompson River are required to determine when and where the mortality occurs, for example, whether late-run sockeye returning in August experience a higher en-route or pre-spawning mortality than late-run sockeye returning in September or October. The answer to this question is critical for mitigating the impacts of the early return on the Fraser sockeye fishery. The large Adams return forecast for 2002 should allow a sufficient sample size for appropriate statistical analysis. The CSC recommends that a scientific team be formed to refine the objectives and to complete and review the experimental design (tag type, number of tags, location and timing of tagging and recovery). The estimated cost for freshwater tagging studies is CDN $500 to $700K.

With tagging studies and test fisheries in place, sockeye could be sampled for physiology, parasitology, and contaminants at a relatively small incremental cost (CDN $50K). Full analysis of these samples would be costly, but by archiving all samples, the highest priority samples could be selected for analysis in 2002 in order to compare, for example, sockeye that spawned successfully or died en-route. Costs of minimal sample analyses for 2002 are approximately CDN $150K.

At present, little information is available on the physical oceanographic conditions experienced by sockeye migrating through Johnston or Juan de Fuca Straits and into the Strait of Georgia. Within this region, changes in physical oceanography occur over small spatial scales so that standard measurements do not provide the necessary detail. The cost of a minimal oceanography study is CDN $100K, which would enable modifications to existing mooring arrays to provide time-series relevant to the late-run sockeye migration. Alternatively, test fishery vessels could be instrumented to collect temperature and salinity data.

The CSC also considered marine tagging studies at a 2002 cost of approximately $400K. At this time, however, the CSC is unable to prioritize among study areas that include marine tagging, parasitology and physiology, and oceanography. The CSC believes that contaminant research has a lower priority than these other study areas, but we agree that

some additional work on contaminants might be warranted if sufficient funding were available to support continued studies in all areas.

The project recommendations that we have presented represent the collective and unanimous advice of the CSC. Investigators at the workshop did not themselves reach a consensus, in part because the amount of available funding was unknown, but to a greater extent because there was no consensus regarding the best strategy to determine the causes for the recent changes in late-run migratory behavior. The CSC advises that continued dialogue should consider all salmon species in the Fraser River.

The Committee on Scientific Cooperation had been assigned to review a report by the Ad Hoc Habitat Form and Function Committee. However, completion of the report has been delayed. The Committee proposes to review the report when it is finalized and to then report to the Commission.

C. MEETINGS OF THE NORTHERN AND SOUTHERN FUND COMMITTEES

Introduction

In June of 1999, the United States and Canada reached a comprehensive new agreement (the "1999 Agreement") under the 1985 Pacific Salmon Treaty. Among other provisions, the 1999 Agreement established two bilateral funds: the Northern Boundary and Transboundary Rivers Restoration and Enhancement Fund (Northern Fund); and the Southern Boundary Restoration and Enhancement Fund (Southern Fund). The purpose of the two funds is to support activities in both countries that develop improved information for resource management, rehabilitate and restore marine and freshwater habitat, and enhance wild stock production through low technology techniques. Subject to Congressional appropriations, the United States agreed to capitalize the Northern and Southern funds in the amounts of $75 million and $65 million, respectively, over a period of up to four years. The 1999 Agreement also established a Northern Fund Committee and a Southern Fund Committee, each comprised of three nationals from each country, to manage the funds.

Committee Members:

Northern Fund Committee

Canada:	United States:
John Lubar, Co-Chair	Jim Balsiger, Co-Chair
Gord Zealand	Kevin Duffy
Ron Fowler	Jev Shelton

Southern Fund Committee

Canada:	United States:
Ron Kadowaki, Co-Chair	Rollie Rousseau, Co-Chair
Don Hall	Larry Rutter
Bill Otway	Arthur Taylor, Jr.

Joint Committee Report

The Joint Northern and Southern Fund Committee met in person on three occasions (January 8, 2001; February 19-20, 2001 and November 29, 2001) and by telephone conference call once (January 16, 2001). In addition, a three person Fund Coordinator Search Committee met in October.

At the initial meeting of the Joint Committee in January at the Four Seasons Hotel in Vancouver BC, Perry Teperson from Hewitt Associates reviewed a draft "Statement of Investment Policies and Goals" for the Master Trust fund. In the following discussion a number of changes and revisions were suggested. It was agreed that these amendments should be incorporated into a second draft for review and adoption pending committee approval at a conference call on January 16, 2001. In addition, a policy on salary honoraria for non-government committee members was adopted. Comments on a draft Report to Governments being prepared by L. Rutter were asked for by the next meeting.

On the conference call in January, John Myrah from Hewitt Associates reviewed the revised "Statement of Investment Policies and Goals". Minor changes were agreed to and the document was formally adopted as policy. Revisions to the draft Report to Governments by L. Rutter were discussed. A motion was passed to not allow American Depository Receipts (non-North American investments) to be a part of the fund's MFS U.S. Equities portfolio.

The Joint Committee's second meeting in person was held at the Embassy Suites Hotel in Portland, OR in February. L. Rutter reviewed the final version of the Report to Governments. A 3 person delegation will take the report to Washington DC in early March. Project management and administration was then discussed with presentations on the Pacific Salmon Endowment Fund (Canadian federal) and the Yukon River Restoration & Enhancement Fund. The need for program staff at the PSC was also discussed. The following day the Joint Committee heard reports back from the Canadian co-chairs of the Northern and Southern Fund Committees, which had met separately the day before. Both committees had discussed spending policies; funding process guidelines and the programs' need for support staff.

The last meeting was held at the PSC offices in Vancouver, BC at the end of November. A principal agenda item was the annual review of asset allocations, investment policies and the performance of the fund. Presentations were made to the Joint Committee by the fund managers: Hewitt, MFS, Putnam and Barclays. There was discussion around rebalancing the bonds portion of the portfolio to bring them back within guideline limits. Discussion also covered committee views on changing the asset mix of 60% equities and 40% bonds and on changing the equity portfolio asset weights presently set at 50% U.S. and 50% international.

Northern Fund Committee

The Northern Fund Committee met on five occasions in 2001 (February 19, 2001; March 14-15, 2001; May 7-8, 2001; July 26-27, 2001; November 30, 2001).

The first meeting was at the Embassy Suites Hotel in Portland, OR. The committee discussed spending policy and agreed to ask Hewitt to provide options for building the fund to a $100M target. They also agreed to hold a workshop in March to develop a strategic direction and identify priorities. Representatives from the Northern and Transboundary Panels and Technical Committees would be invited. They also approved the hiring of 1.5 staff to coordinate fund administration.

The next meeting was held March 14 and 15 at the Boardroom of the PSC in Vancouver. Perry Teperson from Hewitt gave a presentation on Spending Policies. He estimated fund growth over a range of possible rates of return and at low, medium and high levels of spending. The rest of the meeting involved working through a draft Strategic Plan document with consultant Edwin Blewett and with invited guests from the PSC Northern and Transboundary Panels and the Transboundary Technical Committee.

The third meeting was held in May in Vancouver. The Strategic Plan document was further refined and a draft was agreed upon to be sent to relevant PSC Panel and Committee members for comment. Three possible pilot projects were discussed. A Draft Spending Plan was agreed to. The Fund Coordinator position was discussed and hiring was approved. A Calendar of Events was drafted and the committee agreed to consider the RFP process in more depth at their next meeting.

In July the committee met again in Vancouver. Pilot projects were discussed. J. Lubar commented on the Fulton Spawning channel and hanging lakes projects. K. Duffy reported on the Tuya River blockages project. Canadian DFO priority watershed policies were discussed. The Exxon Valdez RFP forms were reviewed and used as a template for a draft document for the committee to use. The Calendar of Events was approved. The Spending Plan was adopted. The Committee reviewed the fund manager's reports for the end of the second quarter.

At the November meeting in Vancouver, committee members reviewed the draft RFP document developed in July. Changes were suggested to expand the sections on habitat restoration and enhancement projects. Date changes to the Calendar of Events document were also made. It was recognized that the pilot projects could not be funded in 2002 because of the financial position of the Fund. However, some level of review of the three pilot projects should be undertaken in the new year. K. Duffy briefed the committee on the Governor of Alaska's proposed Oceans and Watersheds Conference planned for June 2002.

Southern Fund Committee

The Southern Fund Committee met three times in 2001 (February 19 and 20, 2001; March 22-23, 2001; June 14-15, 2001).

In February the first meeting was held at the Embassy Suites Hotel in Portland, OR. Key areas of a Mission Statement were discussed, in particular the issue of targeted RFPs as opposed to an open application driven process. Interactions with the Fraser and the

Southern Panel and their Technical Committees were considered. The question of land acquisitions was raised. A review of other funders was suggested. On the second day, Bill Otway agreed to prepare a draft Mission Statement outlining strategy and goals. Fund staffing was discussed and 1.5 FTE's was agreed to.

The March meeting was held in Vancouver at the PSC offices. A report was given on the visit to Washington, D.C. to meet with the State and Commerce Departments. Perry Teperson from Hewitt gave a presentation on Spending Policies similar to the presentation given to the Northern Committee earlier in March. The committee then worked on producing a draft Southern Fund Expenditure Policy outlining principals, spending plan and decision rules. Hewitt will comment on the draft and report back at the next meeting. The committee then considered Bill Otway's draft Mission Statement. Amendments were made; members were tasked with further developing the concepts and categories outlined. Don Hall volunteered to act as coordinator.

In June the committee again met at the PSC offices in Vancouver. They initially discussed the Fund Coordinator position and a hiring committee was struck. The Southern Fund Expenditure Policy as reviewed by Hewitt was approved. The Mission Statement/Strategic Plan was again reviewed. The Project Selection Process and associated timelines were compared with those developed by the Northern Fund. The following day this discussion continued with the suggestion that a common schedule be considered. A financial report on fund manager performance indicated that market conditions were poor and declining as of March 31. An operating budget for the next fiscal year was requested.

Activities of the Panels

PART III
ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

The Fraser River Panel completed the 2001 fishery management plan for Fraser River sockeye and pink salmon in Panel Area waters on July 3, 2001. The Panel carried out its in-season fishery management responsibilities as per Annex IV, Chapter 4 of the Pacific Salmon Treaty. Commission staff conducted its regular in-season assessment programs and reported results to the Panel.

The Panel met in bilateral session during the January and February 2002 meetings of the Commission to review the results of the 2001 fishing season, to receive reports from Canada on spawning escapements and to discuss issues of concern for the 2002 fishing season. Commission staff reviewed the concerns regarding the potential for continued early upstream migration behavior of Late-run sockeye and identified specific areas of fishery impacts.

B. NORTHERN PANEL

The Bilateral Northern Boundary Panel met several times throughout the Post-Season and Annual meetings in 2002. During the Post-Season meeting, the Panel received: 1) post-season fishery reports for the Northern Boundary area fisheries from the fishery managers, 2) a presentation by Harry Nyce of the Nisga'a Tribe and Karl English of the consulting firm LGL, that outlined the Nisga'a Treaty with respect to the salmon fisheries as well as a description of the assessment program on the Nass River, 3) a presentation by DFO personnel on the Sockeye salmon forecasts for 2002 for the Nass and Skeena Rivers and 4) a report from the Northern Boundary Technical Committee regarding progress on developing agreed post-season accounting methodology. During the Annual meeting, the Panel received and discussed the following: 1) a report stemming from a 1996 request of the Northern Boundary Technical Committee (NBTC) to evaluate the status of coho salmon stocks in the boundary area. The NBTC produced four separate reports on coho salmon and provided the panel with highlights of the reports. In general, the NBTC reported that stocks are healthy; 2) a presentation by DFO personnel on the results of genetic sampling of sockeye sampling. Both parties are planning a genetic sampling program for the boundary area to better support run reconstruction; and 3) a presentation by the NBTC on the methods used for run reconstruction based on scale sampling and modeling. The Panel instructed the NBTC to proceed as quickly as possible to finalize the methods and complete the reconstruction. In addition, the Alaska section received a report on the revisions to the historic escapements.

C. SOUTHERN PANEL

Members of the Southern Panel met on March 4, 2002 to discuss and share on a bilateral basis both countries proposed fishing regimes for 2002. Ed Lockbaum co-chaired the Canadian group and Pat Pattillo sat in as the chair for the U.S. section for Terry Williams. Both coho and chum fisheries were discussed.

D. TRANSBOUNDARY PANEL

The Transboundary Panel met January 7-11, 2002 in Portland, Oregon and February 11-15, 2002 in Vancouver, B.C.

Update on Bi-lateral Tasks Assigned Under 1999 PSC Agreement:

The provisions of the Transboundary River chapter (Chapter 1) of Annex IV apply to the period 1999 to 2008. The agreement specifies:

1.) *The Parties shall improve coordinated management of fisheries on transboundary river stocks, and develop and implement ABM regimes for transboundary chinook, sockeye and coho salmon by May 1, 2004.*

ABM regimes are currently in place for Taku and Stikine River sockeye and Taku River coho. Assessment and management capabilities are improving with time for these stocks. Assessment tools are in place to embark on directed ABM fisheries on Taku River chinook, when the Parties agree on conditions for new fisheries. Progress in developing in-season abundance estimation programs is being made on Stikine River chinook and coho, but implementation of ABM regimes is believed to be one or more years away. Substantial improvements are being made in stock assessment programs for Alsek sockeye and chinook but improvements to in-season abundance estimation capabilities are needed. No new efforts have been directed at Alsek coho, which support only limited harvest opportunities by both countries.

2.) *Once bilaterally agreed MSY escapement objectives and in-season stock assessment programs are established, the Parties agree to examine their abilities to access enhanced sockeye salmon and re-examine harvest sharing arrangements for chinook, sockeye and coho salmon.*

Last year the Panel reviewed Taku chinook AMB regimes. Discussions on harvest sharing and issues related to developing directed Taku River chinook fisheries began, but hit a snag. The U.S. wants to negotiate development of Taku chinook fisheries, for which the information base is most developed and in-season assessment programs are fully developed and ready to implement. The Canadian Panel wants to link negotiations of Taku and Stikine chinook.

3.) *Continue the existing joint enhancement programs designed to produce annually 100,000 returning sockeye salmon to each of the Taku and Stikine rivers.*

Enhancement programs continue on the two rivers. Adult production has not reached the annual production goals to date. Assessment programs are underway in the Taku River to better understand poor fry survival in Tatsamenie Lake. On the Stikine River, programs to improve access for Canadian terminal harvest of enhanced returns at the Tuya River barrier have been undertaken, as well as studies to examine whether fish moved past the several barriers can reach Tuya Lake.

Obstacles to Completing above Bi-lateral Tasks:

Panel deliberations on new fishery ABM fishery regimes and harvest sharing are dependent on development of in-season abundance estimation programs. Significant progress is being made for all species on the Taku and Stikine rivers and for Alsek chinook and sockeye, however ABM capabilities are one or more years away for Stikine chinook and coho and Alsek chinook and sockeye. Adequate funding of assessment programs is critical to implementation of ABM regimes on these rivers.

Proposed Meeting Dates and Draft Agendas:

The Transboundary Panel will meet during the PSC January and February meetings in 2003.

Review of 2001 Fisheries and Treaty-Related Performance

PART IV
REVIEW OF 2001 FISHERIES AND TREATY-RELATED PERFORMANCE

The following review has been drawn from a number of reports prepared by Commission staff, joint technical committees, and domestic agencies for presentation to the Commission. Source documents are referenced for each part of this review. All figures are preliminary and will be updated in future reports as more complete tabulations become available.

A. FRASER RIVER SOCKEYE SALMON

In 2001, the Fraser River Panel managed fisheries in the Panel Area that targeted Fraser River sockeye and pink salmon, under the terms of Annex IV of the Pacific Salmon Treaty that was revised on June 30, 1999. Chapter 4 of Annex IV provides catch sharing arrangements for Fraser River sockeye and pink salmon for the period 1999-2010. Under the new Agreement, the United States sockeye catch in Panel Areas (Washington for 2001) was not to exceed 18.4% of the Total Allowable Catch (TAC) of Fraser River sockeye salmon minus a payback of up to 57,000 fish due to a catch overage in 2000. For Fraser River pink salmon, the United States share for 2001 of the TAC was 25.7% plus up to 22,000 fish due to a catch underage in 1999. Panel Area fisheries in Canada were to be managed by the Fraser River Panel and Canadian fisheries outside the Panel Area were to be managed by Canada in a manner that considered catches in United States fisheries.

Canada provided the Panel with run-size forecasts for Fraser River sockeye and pink salmon and guidelines for calculating spawning escapement targets at a meeting held on April 18-19, 2001. The forecasts were at five probability levels: 25%, 50%, 75%, 80% and 90% probabilities that the run size would be exceeded. Canada identified conservation concerns for Early Stuart, Early Summer-run and Late-run sockeye run timing groups. Summer-run sockeye were expected to provide the majority of the catch. Late-run sockeye conservation concerns assumed that the early river entry timing and associated high mortality that occurred over the last several years would occur again in 2001.

The Panel used the Fishery Simulation Model to examine potential management options for Fraser River sockeye salmon at the 50%, and 75% probability level forecasts, which were 12,864,000, and 6,797,000 fish, respectively. The Fraser River pink salmon run sizes at these probability levels were 5,468,000 and 4,049,000 fish, respectively. The corresponding spawning escapement targets for sockeye were 4,640,000, and 3,605,000 fish, respectively and 4,648,000 and 3,442,000 fish for pink salmon, respectively. The projected TAC at these run sizes for sockeye were 6,908,000, and 2,720,00 fish, respectively, and 615,000 and 333,000 pink salmon.

Domestic allocation targets for Fraser sockeye in Washington were as follows: Treaty Indian fishers were allocated 61% of the United States TAC minus 35,000 fish of the 57,000 fish payback, while Non-Indian fishers were allocated the remaining 39% of the TAC less 22,000 of the 57,000 fish payback. Among Treaty Indians, fishers in Areas 4B, 5 and 6C were allocated a maximum of 12% of the Treaty Indian share. The allocation among Non-Indian fishers was 54% for purse seines, 41% for gillnets and 5% for reefnets.

Domestic allocation targets for Fraser River pink salmon in Washington were as follows: Treaty Indian and Non-Indian fishers were each allocated 50% of the United States TAC plus 11,000 pink salmon as payback for the 1999 catch shortfall.

Domestic allocation targets for Fraser sockeye in Canadian commercial fisheries were as follows: 44% for Area B purse seines, 14.5% for Area D gillnets, 20.5% for Area E gillnets, 11% for Area G trollers and 10% for Area H trollers. Domestic commercial allocation targets for Fraser River pink salmon were 60% for Area B purse seines, 4% for Area D gillnets, 1% for Area E gillnets, 22% for Area G trollers, and 13% for Area H trollers.

The forecasts of diversion rate through Johnstone Strait were 25% and 64% for Fraser River sockeye and pink salmon, respectively. The forecasts of run timing (50% cumulative migration through Canadian Area 20 – Juan de Fuca Strait) were June 30 for Early Stuart sockeye, August 1 for Chilko sockeye, and September 2 for Fraser River pink salmon.

Simulation modeling of harvest strategies for Summer-run sockeye indicated that a significant proportion of the TAC of Summer-run stocks could not be harvested at the 50% probability level forecast due to constraints imposed by the conservation needs of Early Summer-run and Late-run stocks. Differences between the Parties in the preferred approach to in-season management led the Panel to request that the Commission assist in resolving the impasse. On June 28, 2001, the Commission reached agreement on a set of principles that limited the exploitation rate on Late-run stocks to 17% of the run and set a maximum 60% harvest rate for Summer-run sockeye. Each party was responsible for limiting their harvest of Late-run sockeye to their share (18.4% to the United States and 81.6% to Canada).

Based on the Commission agreement, the Panel developed a fishing regime and management plan for Panel Area fisheries on July 3 and recommended that the Commission approve the regime and plan. The Commission accepted the regime and plan and recommended these to the Governments.

The Panel's management plan focused on the conservation of Early Summer-run and Late-run sockeye stocks and on the harvest of Summer-run sockeye. Fishery restrictions were anticipated early in the season to protect Early Stuart and Early Summer-run sockeye and late in the season to protect Late-run stocks. An approximate two-week "window of opportunity" was used in planning fisheries to harvest Summer-run stocks without compromising escapement of Early Stuart, Early Summer-run and Late-run stocks.

Between June 28 and September 18, the Panel met 27 times (by telephone conference and in-person) to discuss run status and enact in-season orders to regulate fisheries. PSC staff provided periodic updates on catches, escapements and racial composition and recommended adoption of in-season run-size estimates. The Panel adopted regulations for Panel Area fisheries consistent with the pre-season planning constraints.

Panel Area fisheries for sockeye salmon were confined to July 25 to August 8, except for a United States reefnet fishery on August 18. Fisheries directed at Fraser River pink salmon were conducted between September 4-19 with non-retention of sockeye and other species. Lower than expected returns of sockeye salmon and larger numbers of pink salmon led to fisheries that differed from pre-season plans.

Catches of Fraser River sockeye salmon in all fisheries totaled 1,551,000 fish. The Canadian catch was 1,177,000 sockeye, United States fishers harvested 251,000 fish, and test fishery catches totaled 123,000 sockeye. Canadian catches included 295,000 fish in commercial fisheries, 831,000 fish in First Nations' fisheries, 37,000 fish in recreational fisheries, 12,000 fish in charter fisheries and 3,000 Weaver Creek sockeye in an "excess salmon to spawning requirements" (ESSR) fishery (male sockeye only). Within the United States catch, 251,000 fish were harvested in Washington waters, including a ceremonial and subsistence catch of 11,000 fish and a commercial catch of 240,000 fish. Commercial fishery catches in both countries summed to 535,000 fish.

Catches of Fraser River pink salmon totaled 1,264,000 fish: 787,000 fish in Canadian, 439,000 fish in United States and 38,000 fish in Panel-approved test fisheries. Included in the Canadian total were 578,000 fish in commercial, 133,000 fish in First Nations', 74,000 fish in recreational and 2,000 fish in charter fisheries. In the United States fishery 425,000 pink salmon were harvested in commercial, 13,000 fish in recreational and 1,000 fish in ceremonial and subsistence fisheries.

The Stock Monitoring program provided in-season estimates of abundance, migration timing and diversion rate of Fraser River sockeye and pink salmon throughout the fishing season. The peak migration timing through to Area 20 was June 28 for Early Stuart sockeye (five days earlier than average), July 17 for Early Summer-run sockeye (four days earlier than average), August 7 for Summer-run sockeye (approximately four days later than average), August 12 for Late-run sockeye (approximately six days earlier than average), and September 2 for Fraser River pink salmon (five days later than average). The overall diversion rate of Fraser sockeye through Johnstone Strait was estimated to be 20% while approximately 60% of Fraser pink salmon migrated via Johnstone Strait.

The Racial Identification program provided estimates of stock composition for sockeye catches in commercial, Aboriginal and test fisheries. Scale, parasite and microsatellite DNA data were employed in this process. Stock composition data were used to estimate the run size and gross escapement of individual stock groups. The primary difficulties were in discriminating the: (1) Chilko/Quesnel from the Fennell/Bowron/Chilliwack stock groups; and (2) Late Stuart/Stellako, Nadina/Pitt, Birkenhead/Adams/Cultus and Weaver/Portage stock groups using scale analysis. A post-season re-analysis using standards developed from spawning ground scales led to minor revisions to racial composition estimates. DNA estimates of stock composition confirmed the presence of Late-run sockeye at critical times during the season. Genetic stock identification (GSI) techniques were used to estimate the contribution of Fraser River pink salmon in commercial and test fisheries.

The return of Early Stuart sockeye (211,000 fish) was near the 75% probability level forecast; Early Summer-run abundance (384,000 fish) was almost double the 50% probability level forecast; Summer-run sockeye (6,016,000 fish) were near the 75% probability level forecast and Late-run sockeye (546,000 fish) returned at approximately the 50% probability level forecast of abundance. Overall, the return (7,157,000 fish) was slightly higher than half of the 50% probability level forecast. Among the Summer-run stocks, Quesnel sockeye dominated the returns, followed by Chilko, Late Stuart, and Stellako sockeye. The largest Late-run return was from Weaver sockeye, followed by Adams, Harrison, Portage, and Birkenhead sockeye. The return of Fraser River pink salmon (21,106,000 fish) was almost four times the 50% probability level forecast.

Recruitment of age 4 sockeye was low in 2001 to all of the stock groups. Recruitment of Late Stuart and many other of the upper Fraser stocks was low, and recruitment of Early Stuart (0.40 age 4 fish per brood year spawner) was particularly low. Chilko smolt survival to age 4 was 3.0% compared to a long-term average of 9.6%.

Near-final estimates of spawning escapements to streams in the Fraser River watershed totaled 5,257,000 adult sockeye. This escapement was 24% larger than the brood year (1997) escapement of 4,252,000 adults. Spawning escapements for Early Stuart sockeye (171,000 fish) were 36% lower than the brood year; Early Summer-run escapements (302,000 fish) were a record for the cycle and over three times the brood year escapement; Summer-run escapements (4,683,000 fish) were 23% higher than the brood year; and Late-run escapement (101,000 fish) was 12% higher than the brood year. Preliminary pink salmon escapement estimates of 19,843,000 fish were over 50% larger than the previous highest escapement on record. The success of spawning by female sockeye in the entire watershed averaged 92%, which exceeded the brood year spawning success rate (89%).

Adjusted gross escapement targets (target + management adjustment) for sockeye salmon were nearly achieved or exceeded for each run-timing group based on lower river estimates (in-season Mission escapement plus First Nations' catch below Mission). Gross escapement targets were short by 4,000 fish for Early Stuart sockeye and exceeded by 83,000 fish for Early Summer-run stocks, by 407,000 fish for Summer-run stocks and by 17,000 fish for Late-run stocks. The total in-season gross escapement estimate exceeded the adjusted target by 503,000 sockeye.

Upriver estimates of gross escapement (in-river catch plus spawning escapement) totaled 1,113,000 sockeye more than the unadjusted target. By run-timing group, gross escapements were 19,000 fish under for Early Stuart, 153,000 fish over for Early Summer-runs, 1,326,000 fish over for Summer-runs and 346,000 fish short for Late-run sockeye. The large shortfalls in Late-run escapements were due to the en route mortalities noted previously.

In terms of the achievement of international allocation targets, the June 28, 2001, Commission agreement stated that the United States share would not be adjusted post-season as a consequence of Canadian domestic policies that result in Canada not achieving its share. Under this provision, the Commission agreed on June 11-12, 2002 that the United States catch of sockeye in 2001 would be treated as the actual share. With respect to pink salmon, the United States proposed for the 2001 season that the international allocation of pink salmon would equal the catch taken be each respective country, with no penalties arising from post-season accounting adjustments. However, to date, the Panel has not formally adopted this proposal.

In United States fisheries, Treaty Indian fishers caught 172,000 sockeye while Non-Indian fishers harvested 79,000 fish, resulting in a total catch of 251,000 fish. Among Treaty Indians, the catch in Areas 4B, 5 and 6C was 37,000 fish while in Areas 6, 7 and 7A the harvest was 135,000 fish. Among Non-Indian fishers, purse seines harvested 45,000 fish, reefnets caught 9,000 fish and gillnets harvested 25,000 fish. With regard to pink salmon, Treaty Indian fishers caught 109,000 fish while Non-Indians harvested 317,000 fish.

Domestic commercial allocation goals in Canada were not achieved, largely because of the substantial restrictions of fisheries due to the lower abundance of Summer-run sockeye and conservation concerns for Early Summer-run and Late-run fish. Within the Canadian

commercial catch of 295,000 Fraser sockeye, Area B purse seines were 52,000 fish under, Area D gillnets were 51,000 fish over, Area E gillnets were 16,000 fish under, Area G trollers were 14,000 fish under and Area H trollers were 31,000 fish over their allocations. With respect to Fraser River pink salmon, Area B purse seines were 153,000 fish over, Area D gillnets were 19,000 fish under, Area E gillnets were 6,000 fish under, Area G trollers were 115,000 fish under and Area H trollers were 14,000 fish under their respective allocations.

The constrained fisheries in 2001 resulted in very low by-catches of other species and stocks that were identified as conservation concerns by the Parties.

In terms of the allocation status for the purpose of calculating catch paybacks in future years, the United States has an overage of 56,000 sockeye and an underage of 21,000 pink salmon.

B. 2001 POST-SEASON REPORT FOR UNITED STATES SALMON FISHERIES OF RELEVANCE TO THE PACIFIC SALMON COMMISSION

Northern Boundary Area Fisheries

District 104 Purse Seine Fishery

The June 30, 1999 revision of the Pacific Salmon Treaty Agreement calls for the implementation of abundance based management in the District 104 purse seine fishery. The agreement allows the District 104 purse seine fishery to harvest 2.45 percent of the Annual Allowable Harvest (AAH) of Nass and Skeena sockeye prior to statistical week 31. The AAH is calculated as the total run of Nass and Skeena sockeye salmon minus either the escapement requirement of 1.1 million (200,000 Nass and 900,000 Skeena) or the actual inriver escapement, whichever is less.

The pre-Week 31 fishing plan for District 104 was based on the preseason forecast of 740,000 Nass and 3,140,000 Skeena sockeye salmon provided by the Canadian Department of Fisheries and Oceans (DFO). However, preliminary indications are that the actual return of Skeena River sockeye was higher than forecast. While the relatively smaller Nass return may have been lower than forecast a higher return of the much more abundant Skeena River fish would result in an increase in the allowable AAH. The preseason forecast yields a total run of 3,880,000, an AAH of 2,780,000, and a pre-Week 31 allowable harvest of a minimum of 68,110 Nass and Skeena sockeye salmon in District 104. Management actions took into account an "underage" of approximately 89,000 sockeye salmon from the 1999 and 2000 seasons.

In 2001, 203,090 sockeye were harvested in two 12-hour, two 10-hour, and one 6-hour openings pre-Week 31 (Table 1). In past years 60 to 80% of these sockeye have been of Nass and Skeena origin. Thus, we would anticipate that between 122,000 and 162,000 Nass and Skeena sockeye were harvested in the District 104 purse seine fishery pre-Week 31. The final targeted number of Nass and Skeena sockeye will not be available until catch, escapement, and stock composition estimates are finalized for the year. The number of boats that participated in each opening ranged from 24 to 78. Districts 101 and 102 were opened for five 15-hour and one 39-hour openings in these weeks. The

shortened openings in District 104 combined with ample early-season fishing opportunities elsewhere in the region effectively limited effort.

The average number of hours, boats, days, and boat-days fished pre-Week 31 in years 1985 to 2001 is down 44 to 74% compared to the 1980-1984 period (Table **2**). The sockeye harvest is also down 22% despite a 262% increase in the average sockeye catch-per-boat-day since 1984.

After Week-30, District 104 was opened the same dates and hours as the purse seine openings in Districts 101, 102, and 103, openings were on a two-day-on and two-day-off schedule from July 29 though September 4. The last opening of the year was an extended opening from August 30 through September 4. There was very little effort in the district during that last opening due to the fact that most fish processing companies had closed for the year.

For the season, the District 104 purse seine fishery harvested 11.91 million pink, 345 thousand chum, 537 thousand sockeye, 134 thousand coho, and 2.7 thousand chinook salmon.

Table 1. Catch and effort in the Alaska District 104 purse seine fishery by opening, 2001.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
27	1-Jul	0	11,802	4,397	33,028	12,782	26	12
28	8-Jul	0	29,912	6,005	70,489	15,662	58	12
28B	12-Jul	0	55,803	6,808	155,344	15,516	44	10
29	15-Jul	0	90,747	13,688	177,713	23,745	78	10
30	22-Jul	0	14,826	6,474	79,833	9,872	24	6
31	29-Jul	0	160,836	32,315	1,648,222	64,675	93	39
31B	2-Aug	53	68,088	25,981	2,346,447	60,026	118	39
32	6-Aug	1,428	52,818	14,358	1,809,200	35,451	91	39
32B	10-Aug	316	20,464	6,413	1,478,380	24,709	68	39
33	14-Aug	219	8,890	6,525	1,464,563	22,947	64	39
33B	18-Aug	636	16,074	8,041	1,805,609	37,455	79	39
34	22-Aug	16	3,887	1,711	533,119	13,107	28	39
35	26-Aug	11	1,785	1,089	187,566	4,690	15	39
35B - 36	30-Aug	0	702	398	125,347	4,335	7	135
Total Weeks 27 - 30		0	203,090	37,372	516,407	77,577	230	50
Total Weeks 31 - 36		2,679	333,544	96,831	11,398,453	267,395	563	447
Total Season		2,679	536,634	134,203	11,914,860	344,972	793	497

Table 2. Fishing opportunity, effort, and sockeye harvests prior to Week 31 in the District 104 purse seine fishery, 1980 to 2001.

Year	Hours Fished	Boats Fished	Fraction Days Fished (1d=15hr)	Boat-Days Fished (Fraction Boats and Fraction Days)	Sockeye Harvest	Sockeye Catch/ Boat-Day
1980	207	244	13.800	3,367	266,273	79
1981	132	212	8.800	1,866	185,188	99
1982	117	255	7.800	1,989	213,150	107
1983	108	241	7.200	1,735	168,806	97
1984	132	174	8.800	1,531	103,319	67
1985	84	141	5.600	790	100,590	127
1986	108	194	7.200	1,397	91,320	65
1987	90	134	6.000	804	72,385	90
1988	108	210	7.200	1,512	248,789	165
1989	84	135	5.600	756	157,566	208
1990	42	171	2.800	479	169,943	355
1991	41	134	2.733	366	98,583	269
1992	29	108	1.933	209	79,643	381
1993	45	171	3.000	513	163,189	318
1994	55	84	3.667	308	158,524	515
1995	58	109	3.867	421	71,376	169
1996	31	113	2.067	234	215,144	921
1997	56	159	3.733	594	572,942	965
1998	32	78	2.133	166	17,394	105
1999	30	38	2.000	76	7,664	101
2000	81	66	5.400	356	48,969	137
2001	50	95	3.333	317	203,090	641
Ave. 80-84	139	225	9.280	2,098	187,347	90
Ave. 85-01	60	126	4.016	547	145,712	326
% Change	-57%	-44%	-57%	-74%	-22%	262%

District 101 Drift Gillnet Fishery

The June 30, 1999 U.S.-Canada agreement relating to the Pacific Salmon Treaty calls for abundance based management of the District 101 (Tree Point) drift gillnet fishery. The agreement specifies a harvest of 13.8 percent of the AAH of the Nass sockeye run. For the 2001 season, DFO had forecasted a total run of 740,000 Nass River sockeye salmon. The AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200 thousand or the actual inriver escapement, whichever is less.

The District 101 drift gillnet fishery opens by regulation on the third Sunday in June. During the early weeks of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the strength of the Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. By regulation, the District 101 Pink Salmon Management Plan sets gillnet fishing time in this

district in relation to the District 101 purse seine fishing time when both fleets are concurrently harvesting the same pink salmon stocks.

In 2001, the District 101 gillnet fishery was managed conservatively in recognition of the modest run of Nass sockeye forecasted and the need to repay a possible AAH overage (numbers are not final yet) of approximately 38,000 Nass sockeye carried forward from the 1999 and 2000 seasons. The district was opened for an initial 3-day fishing week beginning June 17 (Week 25) followed by two openings of 3-days, a 2.5-days fishery, and a 4-day fishery with a 6 inch mesh restriction imposed.. Sockeye, chum, and coho harvests during these openings were well below average. The cumulative sockeye harvest prior to the District 1 Pink Salmon Management Plan was 40,790 fish, or 50% of the season's total sockeye harvest. Nass River sockeye salmon apparently returned at numbers lower than the 740,000 forecast by DFO; if so this would result in a decrease in the allowable AAH for the 2001 District 101 gillnet fishery.

The fishery was managed according to the Pink Salmon Management Plan from Week 31 through Week 36. Based on the very strong return of pink salmon to District 101, 5-day openings in Weeks 30 through Week 36 allowed. During this time the effort (boats-days) was well below Treaty averages as was the sockeye, pink, chum, and coho harvest.

Starting on September 9 (Week 37) and continuing through the close of the fishery on September 19 (Week 38), the fishery was managed on the strength of the fall chum and coho returns. Chum and coho harvests were below Treaty averages these weeks. The below average catches are more a reflection of the reduced effort at Tree Point in 2001 more than a resource problem.

A total of 80,041 sockeye salmon were harvested in the District 101 drift gillnet fishery in 2001 (Table 3). The sockeye harvest and number of boat-hours and boats fished was below the 1985-2000 average and the hours fished was above average. The final number of Nass River sockeye harvested at Tree Point will not be available until catch, escapement, and stock composition estimates are finalized for the 2001 season.

Table 3. Weekly catch and effort in the Alaska District 101 commercial drift gillnet fishery, 2001.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Boats	Hours
27	1-Jul	0	11,802	4,397	33,028	12,782	26	12
28	8-Jul	0	29,912	6,005	70,489	15,662	58	12
28B	12-Jul	0	55,803	6,808	155,344	15,516	44	10
29	15-Jul	0	90,747	13,688	177,713	23,745	78	10
30	22-Jul	0	14,826	6,474	79,833	9,872	24	6
31	29-Jul	0	160,836	32,315	1,648,222	64,675	93	39
31B	2-Aug	53	68,088	25,981	2,346,447	60,026	118	39
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35B - 36	30-Aug	0	702	398	125,347	4,335	7	135
Total Weeks 27 - 30		0	203,090	37,372	516,407	77,577	230	50
Total Weeks 31 - 36		2,679	333,544	96,831	11,398,453	267,395	563	447
Total Season		2,679	536,634	134,203	11,914,860	344,972	793	497

Table 4. Annual sockeye harvest in the Alaska District 101 drift gillnet fishery, 1985 to 2001, and comparison of sockeye harvest and effort (number of boats, hours, and boat-hours fished) between Statistical Weeks 26 and 35 when sockeye salmon are most abundant in this district.

Year	Annual Sockeye Harvest	Catch and Effort Between Weeks 26 and 35			
		Sockeye Harvest	Boats	Hours	Boat-Hours
1985	173,100	159,021	153	1,032	157,865
1986	145,699	143,286	198	960	190,044
1987	107,503	106,638	170	615	104,519
1988	116,115	115,888	187	756	141,338
1989	144,936	130,024	176	1,023	180,016
1990	85,691	78,131	150	840	125,969
1991	131,492	123,508	130	984	127,920
1992	244,649	243,878	118	1,080	127,416
1993	394,098	390,299	148	1,032	152,733
1994	100,377	98,725	142	984	139,700
1995	164,294	151,131	128	1,008	129,024
1996	212,403	175,569	129	1,104	142,408
1997	169,474	152,662	128	1,008	129,024
1998	160,506	159,307	124	1,044	129,454
1999	160,028	158,268	118	1,032	121,776
2000	94,651	94,399	95	912	86,640
Average 1985-2000	162,814	155,046	143	963	136,615
2001	80,041	62,129	73	1,020	74,457

Escapements

Pink salmon escapement indices were above the 1990-2000 average in most stock groups in Districts 101-108. However, escapements were generally well distributed among streams and stocks. When summed across Districts 101-108, the escapement indices totaled 11.7 million, above the goal range of 6.0 – 9.0 million even with high harvest levels.

Programs to estimate escapements of sockeye salmon were in place for nine systems in southern Southeast Alaska in 2001, Hetta, Hugh Smith, Luck, Klawock, McDonald, Salmon (Karta), Salmon Bay (N. Prince of Wales), and Thoms Lakes. All estimates at this time are preliminary. The sockeye escapement to Hetta Lake was 2,547 ± 199, based on mark-recapture counts. The sockeye escapement to Hugh Smith Lake was 3,789 ± 329, based on mark-recapture counts. The sockeye escapement to Luck Lake was 7,879 ± 1,184, based on mark-recapture counts. Klawock Lake had a weir count of 7,236 with a total escapement estimated at 15,593 ± 2,242 based on mark-recapture counts. The escapement of sockeye salmon into McDonald Lake was estimated to be 42,768 based on the expanded foot survey index. Approximately 29,700 McDonald Lake sockeye were

harvested in a directed seine fishery in West Behm Canal with a total commercial harvest estimated at 107,363 sockeye and a total run of 158,498. Salmon Lake escapement was estimated at 21,034 based on the expanded foot survey index. Salmon Bay Lake escapement was estimated at 20,779 ± 6,733 based on mark-recapture counts. Thoms Lake escapement was estimated at 3,044 ± 401 based on mark-recapture counts.

Escapements of summer and fall run chum salmon were generally well distributed throughout southern Southeast Alaska. Index counts were 4.8% below the 1990-2000 average. The escapement of chum salmon into Fish Creek at the head of Portland Canal was estimated to be 13,022 based on expanded foot survey counts, this is below the 10-year average.

Helicopter surveys of coho salmon spawners indicated that escapements were well above average for most systems in southern Southeast Alaska. The Ketchikan area coho escapement index of 12,100 spawners for 16 streams was a new record, and 52% above the 1987-2000 average of 7,961. The total escapement of 1,580 spawners to Hugh Smith Lake was well above the biological goal range of 500-1,100 and also above the 1982-2000 average of 1,199. The spring 2000 migration of 32,036 smolts from Hugh Smith Lake was only 73% of average, while the marine survival rate of 13.4% was slightly above the historical average of 12.9%. The resultant run estimate of 3,136 adults was below average (4,170), however, escapement was well above average because of a record low total exploitation rate of only 50%, compared with the 1990s average of 75%. A mark-recapture estimate of the total escapement to the Unuk River was 40,540 compared with estimates of 25,778 in 1999 and 15,746 in 2000.

Transboundary Area Fisheries

Stikine River Area Fisheries

The 2001 harvest in the District 106 commercial gillnet fishery included 1,057 chinook, 164,013 sockeye, 188,465 coho, 825,330 pink, and 282,910 chum salmon (Table 5). District 106 catches of chinook, pink, and chum salmon were above the 1991-2000 average, while the 2001 catches of sockeye and coho where both less than 10% below the 10 year average. An estimated 34% of the coho salmon harvest was of Alaskan hatchery origin. The U.S./Canada joint Tahltan and Tuya fry-planting projects contributed an estimated 12,738 fish to the District 106 sockeye catch.

Table 5. Weekly salmon catch in the Alaskan District 106 commercial drift gillnet fisheries, 2001. Catches do not include Blind Slough terminal area harvests.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Permits	Days	Permit Days
25	17-Jun	336	8,767	374	407	6,378	48	2	96
26	24-Jun	178	16,452	2,233	8,558	15,356	83	2	166
27	1-Jul	118	12,282	4,227	31,598	20,256	91	2	182
28	8-Jul	49	16,337	5,454	28,992	24,275	90	2	180
29	15-Jul	186	40,047	18,515	138,712	55,931	121	3	363
30	22-Jul	120	39,686	11,203	113,272	34,044	119	3	357
31	29-Jul	33	22,803	9,514	142,733	24,215	111	3	333
32	5-Aug	10	4,450	6,390	116,531	10,018	69	4	276
33	12-Aug	2	1,969	5,588	143,647	9,211	68	4	272
34	19-Aug	0	746	11,955	59,923	14,499	83	4	332
35	26-Aug	0	208	18,546	29,785	14,243	80	4	320
36	2-Sep	5	153	16,555	6,228	16,244	85	3	255
37	9-Sep	3	89	28,478	4,637	24,371	91	3	273
38	16-Sep	3	18	19,427	304	7,469	83	3	249
39	23-Sep	4	2	15,186	3	4,030	39	3	117
40	30-Sep	9	4	12,058	0	2,065	23	3	69
41	7-Oct	1	0	2,762	0	305	7	2	14
Total		1,057	164,013	188,465	825,330	282,910	1,291	50	3,853

In the District 108 fishery, 7 chinook, 610 sockeye, 10,731 coho, 11,012 pink, and 5,397 chum salmon were harvested (Table 6). District 108 was not opened until week 31 due to concerns related to Tahltan Lake sockeye salmon. Because the fishery was delayed, comparisons of 2001 harvests to previous 10-year averages are meaningless. An estimated 9% of the coho catch was of Alaskan hatchery origin. The U.S./Canada joint Tahltan and Tuya Lake fry-planting projects contributed an estimated 15 sockeye salmon to the District 108 catch.

Table 6. Weekly salmon catch and effort in the Alaskan District 108 commercial drift gillnet fishery, 2001. Catches do not include Ohmer Creek terminal area harvests. The permit days are not adjusted for boats that did not fish the entire opening.

		Catch							
Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Permits	Days	Permit Days
31	29-Jul	1	324	84	1,868	736	9	3	27
32	5-Aug	6	223	340	6,242	1,373	11	4	44
33	12-Aug	0	12	189	754	63	5	4	20
34	19-Aug	0	15	547	521	113	6	4	24
35	26-Aug	0	20	1,272	1,446	455	19	4	76
36	2-Sep	0	13	2,052	85	1,248	20	3	60
37	9-Sep	0	1	1,871	96	650	12	3	36
38	16-Sep	0	2	1,707	0	431	16	3	48
39	23-Sep	0	0	1,845	0	293	11	3	33
40	30-Sep	0	0	824	0	35	3	3	9
Total		7	610	10,731	11,012	5,397	112	34	377

Harvest sharing of Stikine sockeye stocks is based on in-season abundance forecasts produced by the Stikine Management Model (SMM) (Table 7). The marine and inriver catches of planted Tuya fish were estimated from analysis of otoliths for thermal marks. Egg diameter analysis of inriver catches was used to estimate the relative abundances of Tahltan and Mainstem fish to Tuya fish in the Stikine River. The historical average weekly stock compositions were used to estimate the harvests of Tahltan and Mainstem Stikine sockeye stocks. Based on these analyses and ratios, the Sumner Strait fishery (Subdistricts 106-41 & 42) harvested 16,203 Stikine sockeye salmon, 16.3% of the total sockeye harvest in those Subdistricts. The Clarence Strait fishery (Subdistrict 106-30) harvested an estimated 4,116 Stikine fish, 6.3% of the harvest in that subdistrict. It is estimated that the District 108 fishery harvested 15 Stikine fish, 0.2% of the total sockeye harvest in that area. An estimated 20,333 Stikine sockeye salmon were harvested in commercial gillnet fisheries from both districts, representing 12.3% of the total sockeye catch. Of these Stikine sockeye salmon, an estimated 12,753 fish were produced by the joint U.S./Canada fry-planting projects on the Stikine River.

Preliminary postseason run reconstruction estimates (Table 8) differ from the in-season management model estimates.

Table 7. Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as determined in-season by the Stikine Management Model, 2001.

Stat. Week	Start Date	Forecasts Run Size [a]	TAC	TAC		Cumulative Catch	
				U.S.	Canada	U.S.	Canada [b]
Model Runs Generated by the U.S.							
25	21-Jun	113,000	26,642	13,321	13,321	2,146	
26	28-Jun	113,000	26,642	13,321	13,321	6,886	237
27	5-Jul	113,000	26,642	13,321	13,321	13,363	3,639
28	12-Jul	192,828	119,089	59,545	59,545	22,441	7,822
29	19-Jul	219,479	138,666	69,333	69,333	28,830	13,521
30	26-Jul	211,202	119,071	59,536	59,536	26,207	20,282
31	2-Aug	171,950	85,361	42,681	42,681	26,402	20,282
32	9-Aug	155,603	70,241	35,121	35,121	27,067	24,162
33	16-Aug	170,796	86,459	43,230	43,230	27,179	24,162
34	23-Aug	164,161	80,098	40,049	40,049		

[a] U.S. forecasts were as follows: the preseason forecast was used for weeks 25, 26, and 27; the inriver test fishery CPUE data for the remainder of the sockeye season. (Canada independently generates forecasts that may use different criteria in some weeks.)

[b] Cumulative catch for Canada does not include approximately 1,500 Tuya ESSR fishery catch.

The estimated Stikine sockeye run was 142,994 fish (Table 8). The estimated spawning escapement of sockeye salmon past Tahltan Lake weir was approximately 15,000 fish of which 2,700 were taken for broodstock and biological samples, this is below the desired point goal of 20,000 spawners. The estimated spawning escapement to the Stikine River mainstem was approximately 42,500 fish, which is slightly above the upper goal range of 40,000 fish.

Table 8. Preliminary run reconstruction for Stikine sockeye salmon, 2001.

	Tahltan	Tuya	Mainstem	Total
Escapement	15,000	32,774	48,125	95,900
Broodstock	2,296			
ESSR or Samples	400	1,500		
Spawning	12,304		48,125	60,429
Excess		31,274		
Canadian Harvest				
Indian Food	1,778	1,036	307	3,121
Upper Commercial	333	151	3	487
Lower Commercial	2,758	4,921	12,193	19,872
Total	4,869	6,108	12,503	23,480
Test Fishery Catch	462	1,083	1,736	3,281
Inriver Run	20,331	39,965	62,364	122,661
U.S. Harvest				
106-41&42	3,250	9,426	3,527	16,203
106-30	437	1,721	1,958	4,166
108	0	15	1	15
Total	3,687	11,161	5,486	20,333
Total Run	24,018	51,126	67,850	142,994
Escapement Goal	24,000		30,000	54,000
TAC	18	38	37,850	37,907
Canada TAC	9	19	18,925	18,953
Actual Catch	4,869	6,108	12,503	23,480
% of TAC			33.0%	61.9%
U.S. TAC	9	19	18,925	18,953
Actual Catch	3,687	11,161	5,486	20,333
% of TAC			14.5%	53.6%

The postseason estimates are likely to change when stock identification analyses are completed.

Taku River Area Fisheries

The District 111 commercial drift gillnet fishery salmon harvests totaled 1,696 chinook, 290,450 sockeye, 22,529 coho, 122,829 pink, and 236,962 chum salmon. Catches of chinook, coho, and chum salmon were below average. The catch of pink salmon was average. The catch of sockeye salmon was a record. Enhanced stocks contributed significantly to the numbers of both sockeye and chums harvested, and minor numbers to the harvest of other species.

Table 9. Weekly salmon catch in the Alaskan District 111 commercial drift gillnet fishery, 2001.

					CATCH				
Stat week	Start date	Days open (traditional fishery)	Boats fished	Boat days	Chinook	Sockeye	Coho	Pink	Chum
25	17-Jun	3	96	288	539	11,829	0	4	9,478
26	24-Jun	3	93	279	329	13,315	4	209	29,228
27	1-Jul	4	106	424	294	24,259	9	4,390	45,946
28	8-Jul	3	121	363	101	22,219	29	8,264	38,858
29	15-Jul	4	132	528	112	51,378	122	15,907	52,603
30	22-Jul	4	154	616	144	47,911	197	20,226	28,996
31	29-Jul	5	154	770	118	68,965	684	20,978	18,691
32	5-Aug	5	162	810	46	33,844	7,505	34,730	7,652
33	12-Aug	4	92	368	11	12,295	3,470	17,088	3,824
34	19-Aug	3	41	123	1	3,992	1,501	975	932
35	26-Aug	2	27	54	0	377	1,571	41	327
36	2-Sep	2	13	26	0	53	1,174	17	331
37	9-Sep	2	6	12	0	7	1,129	0	25
38	16-Sep	3	12	36	1	6	2,003	0	42
39	23-Sep	2	6	12	0	0	1,995	0	29
40	30-Sep	3	8	24	0	0	1,136	0	0
41	7-Oct	2	0	0		0	0	0	0
Fishery total		52		4,733	1,696	290,450	22,529	122,829	236,962
1991-2000 Avg.		49		3,580	3,170	123,645	72,750	122,573	291,653
2001 % 10-yr Avg		106%		132%	54%	235%	31%	100%	81%

The chinook salmon harvest of 1,696 fish was 54% of the 1991-2000 average. Alaskan hatchery fish contributed 472 fish as estimated by coded wire tag (CWT) analysis, or approximately 28% of the harvest. The Taku River stock assessment program at Canyon Island estimated the up-river chinook escapement at approximately 47,000 fish. The escapement goal range is from 30,000 to 55,000 chinook salmon.

The sockeye harvest was 290,450 fish, 235% of the 1991-2000 average. Sockeye salmon from a joint U.S./Canada fry-planting program at Tatsamenie Lake contributed an estimated 9,027 fish, 3% of the total sockeye catch. Additionally, an estimated 65,736 (23%) domestic enhanced sockeye were harvested in the traditional gillnet fishery and 4,902 (2%) in openings in the Speel Arm Terminal Harvest Area in the vicinity of Snettisham Hatchery. Wild fish contributed the remainder of the harvest; an estimated 183,122 (63%) from the Taku River and 27,663 (10%) from Port Snettisham systems.

Coho stocks harvested in District 111 include runs to the Taku River, Port Snettisham, Stephens Passage, and local Juneau area streams as well as Alaskan hatcheries. The coho catch of 22,529 fish was 31% of the 1991-2000 average. Weekly coho catches were below average in most cases. Effort levels in the main fall fishery were well below average, at least partially as a result of poor prices for coho salmon. Alaskan hatchery

coho salmon contributed 1,619 fish or 7% of the District 111 harvest. Estimates of the escapement of Taku River coho salmon were below average until September, when the run improved appreciably. The preliminary estimate of coho escapement above Canyon Island exceeded 100,000 and was well above the escapement goal.

The District 111 pink salmon harvest of 122,829 fish was 100% of the 1991-2000 average. Escapement numbers to the Taku River are unknown, however the numbers of pinks passing through the fish wheels at Canyon Island are used as an index of escapement and were below average.

The catch total of 236,962 chum salmon was 81% of the 1991-2000 average, and was comprised almost entirely of summer run fish. The summer chum run is considered to last through mid-August (week 33) and is comprised mostly of domestic hatchery fish, with small numbers of wild stock fish contributing. Chum salmon returning both to DIPAC hatcheries in Gastineau Channel and to the DIPAC remote release site at Limestone Inlet contributed a major portion of the catch but quantitative contribution estimates were not available. Approximately 60% of the District 111 chum catch was made in Taku Inlet, 40% in Stephens Passage, and less than 1% inside Port Snettisham. The catch of 1,686 fall chum salmon (i.e. chum salmon caught after week 33) was 18% of the 1991-2000 average. Most of these chums are of wild Taku River origin. Escapement numbers to the Taku River are unknown; however, the numbers of fall chums passing through the fish wheels at Canyon Island were used as an index of escapement. The index number for 2001, 250 chums, was a decrease from 2000 and is well below the long-term average.

Several other fisheries in the Juneau area harvested Taku River stocks in 2001. Personal use salmon permits were issued for Taku River sockeye salmon, estimates of the harvest in that fishery are not available at this time although a projection of 5,000 fish is included for preliminary run size projections. The spring Juneau-area sport fishery harvested an estimated 2,232 large chinook (28 inches or longer) and 23 small chinook salmon. Of the large fish, 1,001 (45%) were wild mature. A number of stocks are known to contribute to the Juneau area sport fishery, including those from the Taku, Chilkat, and King Salmon rivers, and local hatchery stocks, but the major contributor of large, wild mature fish was believed to be the Taku River. The July Hawk Inlet shoreline purse seine fishery operating north of Point Marsden in Chatham Strait was open for one 12-hour fishing period in mid-July. A large number of stocks contribute to this pink salmon directed fishery, and catches during this opening totaled 194,600 pink and 10,500 sockeye salmon.

The total Taku sockeye run was an estimated 395,800 sockeye salmon. Based on the escapement goal midpoint of 75,000 fish, the TAC was 320,800 fish of which the U.S. harvested an estimated 197,100, or 60% (Table 10). The estimated escapement of Taku River sockeye salmon was 156,300 fish. The total run, U.S. harvest and escapement were all the highest on record. Escapements of sockeye salmon to Port Snettisham systems were also good, with approximately 8,000 counted through a weir at Speel Lake and a peak aerial survey count of 13,500 sockeye salmon at Crescent Lake.

Table 10. Preliminary Taku sockeye salmon run reconstruction, 2001. Estimates do not include spawning escapements below the U.S./Canada border. The TAC does not account for the change in harvest share agreements when the sockeye escapement exceeds 100,000 fish.

	Taku[a]
Estimated Taku Inriver Run	203,683
Estimated U.S. Catch Taku fish	197,149
Total Run	395,832
Escapement Goal	75,000
TAC	320,832
U.S. TAC	257,797
Estimated U.S. Taku Catch	192,149
Projected personal use catch	5,000
Remaining U.S. TAC	60,647
U.S. harvest share (catch/total TAC)	0.599
Canada TAC	63,035
Estimated Canada catch	47,431
Remaining Canada TAC	15,604
Canada harvest share (cat/total TAC)	0.148

[a] United States and Canada TAC computations based on harvest sharing arrangement described in Annex IV, Chapter 1, (3)(b)(1)(i).

Alsek River Area Fisheries

Although harvest sharing arrangements of Alsek salmon stocks between Canada and the U.S. have not been specified, Annex IV of the Pacific Salmon Treaty does call for a cooperative attempt to rebuild depressed chinook and early-run sockeye stocks. Preseason expectations were for an above average of coho run and below average runs of chinook and sockeye salmon. These expectations were based on parent-year escapements to the Klukshu River. The Alsek River commercial fishery opened on the first Monday in June, statistical week 23 (June 4). The initial opening was 24 hours as was the second opening. Fishery performance during the third opening indicated some run strength, and the opening was extended to 48 hours before returning to 24 hours for the fourth opening. The fishery was opened for 48 hours from statistical week 27 through week 30, and for 72 hours during week 31 as CPUE indicated stronger returns than expected. Openings were limited to 24 hours for the remainder of the sockeye fishery (weeks 32 and 33). The fishery targeted coho stocks after late August and fishing times remained at 72 hours for most of the coho season.

The Dry Bay commercial set-gillnet fishery harvested 541 chinook, 13,995 sockeye, 2,909 coho, 8 pink, and 17 chum salmon (Table 11). The chinook harvest was 3% above the 1991-2000 average, the sockeye harvest was 75% of average, and the coho harvest was 47% of average. The number of fishing days was 50. The majority of fishing time (32 days) occurred late in the season (early September through the end of October) after the sockeye run had largely passed through the fishery. The total effort expended in the fishery was 234 boat-days, 49% of the 1991-2000 average.

Final escapement counts from the Klukshu weir are not available at this time but the sockeye salmon escapement was much improved from 2000.

Table 11. Weekly catch and effort in the U.S. commercial fishery in the Alsek River, 2001.

Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Permits	Days Open	Permit Days
23	4-Jun	145	407	0	0	0	11	1	11
24	11-Jun	147	445	0	0	0	12	1	12
25	18-Jun	151	1208	0	0	0	10	2	20
26	25-Jun	70	543	0	0	0	9	1	9
27	2-Jul	17	1578	0	0	0	9	2	18
28	9-Jul	9	2105	0	0	0	10	2	20
29	16-Jul	1	2649	0	3	0	10	2	20
30	23-Jul	0	939	0	1	1	10	2	20
31	30-Jul	1	3176	0	4	0	10	3	30
32	6-Aug	0	668	3	0	2	9	1	9
33	13-Aug	0	125	15	0	2	5	1	5
34	20-Aug	0	108	232	0	1	5	3	15
35	27-Aug	0	25	548	0	4	5	3	15
36	3-Sep	0	13	800	0	4	5	3	15
37	10-Sep	0	4	443	0	1	2	3	6
38	17-Sep	0	2	868	0	2	3	3	9
39	24-Sep	0	0	0	0	0	0	3	0
40	1-Oct	0	0	0	0	0	0	3	0
41	8-Oct	0	0	0	0	0	0	3	0
42	15-Oct	0	0	0	0	0	0	3	0
43	22-Oct	0	0	0	0	0	0	3	0
44	29-Oct	0	0	0	0	0	0	2	0
Totals		541	13,995	2,909	8	17	12	50	234

Transboundary River Joint Enhancement Activities

The transport of sockeye fry back to the Canadian lakes took place between May 25 and June 16, 2001. This season saw a very late ice-out on the Canadian lakes and there were many weather-related delays during the fry transports. A total of 8 flights resulted in close to 4.2 million fry being transferred. Fry were produced at Snettisham Hatchery from a collection of 2.6 and 2.4 million eggs taken in year 2000, at Tatsamenie and Tahltan Lakes respectively. The small number of fry planted in Tahltan Lake was due to broodstock limitations. There was an overall survival of 84.3% during the incubation period (Table 12). Thermal marking took place before the fish hatched and all release groups were successfully marked.

Table 12. Releases and survivals of 2000 brood sockeye salmon outplanted into Stikine and Taku systems in May – June 2001.

Brood Stock	System Stocked	# of Trips	# of Fry Released	Green to Eye % Survival	Green to Release % Survival
Tahltan L.	Tahltan L. (Stikine)	4	1,872,611	92.0%	78.4%
Tatsamenie L	Upper Tats.L. (Taku)	4	2,319,588	94.3%	90.2%
	Ave/Totals	8	4,192,199	93.2%	84.3%

Two different release groups were planted into Tatsamenie Lake this year with the fry held in net pens for short-term rearing with the expectation that a larger size at release would improve survival. In Tahltan Lake, the fry were held for a short period in net pens to observe any transport mortality (there was no significant loss of fry).

The year 2001 egg takes started on September 2nd at Tahltan Lake and Sept 18th on Tatsamenie Lake. The 1,148 Tahltan females collected produced 3,329,200 green eggs. In Tatsamenie Lake, 852 females were collected which yielded 3,817,920 green eggs. The disposition of the fry resulting from 3.3 million eggs from Tahltan Lake will be decided at the fall 2001 TTC meeting in Whitehorse and all of the brood year 2001 Tatsamenie Lake fry will be planted in Tatsamenie Lake in 2002.

During the 2001 season the ADFG thermal mark lab received 15,657 sockeye otoliths collected by ADFG and DFO staff as part of the U.S./Canada fry-planting evaluation program. These collections came from commercial and test fisheries in U.S. waters and in Canadian fisheries on the Taku and Stikine Rivers over a 14-week period. In addition, several escapement samples were examined. Combined, the laboratory processed 12,820 of the otoliths received (82%) and provided estimates on hatchery contributions for almost 100 distinct sampling collections. Of these totals, 2,922 otoliths were identified and classified as belonging to one of 29 marked groups. Estimates of the percentage of hatchery fish contributed to commercial fishery catches were provided to ADF&G and DFO fishery managers 24 to 48 hours after samples arrived at the lab.

Southeast Alaska Chinook Salmon Fishery

All Gear Harvest

The 2001 preseason chinook salmon target harvest level was determined using the abundance index of 1.14 generated with the CTC model calibration 0107. The corresponding target harvest of 189,900 was identified using Table 1 of Chapter 3. The preliminary estimate of the 2001 chinook salmon catch by all Southeast Alaska fisheries was 259,600 fish (Table 13). The base catch (total minus the add-on) was 189,500 fish, slightly below the target harvest of 189,900.

Table 13. Chinook all-gear catches in Southeast Alaska, 1987 to 2001, and deviation from the ceiling for years for which there were ceilings. Catches in thousands.

Year	Total Catch	Add-on Catch	Target Harvest	Base Catch	Deviation Number	Deviation Percent
1987	281.9	16.7	263	265.2	2.2	0.8%
1988	278.9	23.7	263	255.2	-7.8	-3.0%
1989	291.1	26.7	263	264.4	1.4	0.5%
1990	366.9	53.7	302	313.2	11.2	3.7%
1991	357.0	61.4	273	295.6	22.6	8.3%
1992	260.0	38.3	263	221.7	-41.3	-15.7%
1993	301.9	33.7	263	268.2	5.2	2.0%
1994	261.9	30.9		231.0		
1995	231.1	56.6		174.5		
1996	217.2	68.2		149.0		
1997	339.2	47.6		291.6		
1998	271.0	26.2	260	244.8	-15.2	-5.9%
1999	251.0	46.3	184.2	200.2	16.0	8.7%
2000	263.3	73.9	178.5	189.4	10.9	6.1%
2001	259.6	69.2	189.9[1]	189.5	-0.41	

[1]The actual target harvest and deviation cannot be calculated until the CTC completes the post-season calibration.

Troll Fishery

The winter troll fishery harvested 22,600 chinook salmon from October 11, 2000 through April 14, 2001. A total of 2,800 fish were from Alaska hatcheries with 2,300 fish counting toward the Alaska hatchery add-on.

Spring fisheries were conducted prior to the July general summer opening. The spring fisheries are designed to increase the harvest of Alaskan hatchery produced chinook salmon by allowing trolling in small areas close to the hatchery where these fish concentrate. Terminal fisheries are a portion of the spring fisheries and occur directly in front of hatcheries or at remote release sites.

While there is no ceiling on the number of chinook salmon harvested in the spring fisheries the take of Treaty chinook salmon is limited according to the percentage of the Alaskan hatchery fish taken in the fishery. The catches in 2001 were: 7,200 fish in the terminal fisheries and 28,200 fish in the general spring fisheries. A total of 58.5% of the chinook salmon landed in these fisheries were from Alaska hatcheries.

In the 2001 summer season there were two chinook salmon retention periods. The first chinook retention period began on July 1 and continued through July 6. The fishery harvested 64,900 chinook salmon of which 3,700 fish were from Alaska hatcheries (3,000 counting toward the Alaska hatchery add-on). The second opening occurred from August 18 through September 5. A total of 30,500 chinook salmon were harvested with 1,300 fish from Alaska hatcheries (1,000 counting toward the Alaska hatchery add-on). The total summer troll harvest was 95,400 chinook salmon.

Net Fisheries

Net fisheries have a guideline harvest of 8,600 chinook salmon, plus 4.3% of the annual harvest ceiling established by the Pacific Salmon Commission (8,200 for a total net harvest of 16,800), plus Alaska hatchery add-on chinook. Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and only constitute a small fraction (<1.0%) of the total net harvest of all species. In 2001, the net fisheries harvested 38,500 chinook salmon of which 26,100 were from Alaska hatcheries with 18,000 counting as Alaska hatchery add-on.

Recreational Fisheries

The 2001 recreational fishery had a harvest of 67,900 chinook salmon of which 24,400 were from Alaska hatcheries (20,700 counting toward the Alaska hatchery add-on).

Southeast Alaska Coho Salmon Fisheries

Attachment B of the June 30, 1999 U.S.-Canada Agreement relating to the Pacific Salmon Treaty specifies provisions for in-season conservation and information sharing for northern boundary coho salmon. In 2001, troll CPUE in Area 6 in the early weeks of the fishery averaged 89.5, well above the highest specified boundary area conservation trigger of 22. The mid-July projection of region-wide total commercial harvest was greater than the 1.12 million trigger for an early region-wide troll closure, specified in Alaska Board of Fisheries regulation and the PST conservation agreement.

The all-gear catch of coho salmon totaled 3.25 million fish of which 2.94 million were taken in commercial fisheries (Table 14). Troll catch rates throughout the season were second only to 1994, with a mean-average seasonal catch rate for power trollers of 93 fish per boat-day. The sport catch of 306,000 fish is a very preliminary projection. Wild production accounted for 2.07 million fish (80%) in the commercial catch. Total indicator-stock run sizes were generally similar to the 1980s-1990s average. Inside escapements were well above goal ranges and were at record levels in some cases while outer coast escapements were within biological goals. In general, the marine survival indicators were below levels observed in recent years and high smolt production appears to have driven this year's strong runs. Exploitation rates were substantially lower than in recent years for inside indicator stocks in both northern and southern Southeast, and this resulted in relatively strong escapements from relatively low returns. Low exploitation rates were primarily the result of: 1) low overall troll effort due, in part, to trollers targeting hatchery chum, 2) low prices late in the season for both troll and gillnet fish which further depressed fishing effort, and 3) a substantial return of coho in mid-September after fishing effort had declined. The 2001 region-wide troll coho fishery began July 1 and ended September 30, with closed periods from August 13-17 and September 21-24.

Table 14. Coho salmon harvest in Southeast Alaska in 2001 by gear type (preliminary).

Gear Type	Harvest
Troll	1,845,200
Purse seine	556,100
Drift Gillnet	337,600
Set Gillnet	205,200
Sport	306,000
Total	3,250,100

Preliminary 2001 Chinook and Coho Salmon Catches in Washington and Oregon Fisheries

Ocean Fisheries

Fisheries off the Oregon and Washington coast are developed by the state of Oregon and Washington, treaty Indian tribes, and federal management entities through the Pacific Fishery Management Council (PFMC) process. The ocean fisheries in U.S. waters are typically constrained by coho and chinook ceilings.

Central Oregon Fisheries

Fisheries off the central Oregon coast are developed through the PFMC process and are constrained by weak chinook and coho salmon stocks.

While chinook stocks in the North Oregon Coast (NOC) and Mid-Oregon Coast (MOC) aggregates are far north migrating and contribute significantly to southeast Alaskan and Canadian fisheries, their contributions to fisheries off the coast of Oregon are very minor. NOC stocks for example probably contribute to less than 5% of the total catch in Oregon coastal fisheries. Oregon fisheries are believed to account for a higher proportion of fishery related mortalities for MOC stocks. Actual catch contribution data in Oregon coastal fisheries are not readily available for any stocks in the MOC except the Elk River stock that is caught in a small pre-terminal fishery in state waters near the river mouth. Stocks in both NOC and MOC aggregates are harvested in estuarine and freshwater recreational fisheries when mature fish return to natal streams to spawn. The 2001 recreational fisheries are still in progress. In-season estimates are not made for Oregon's estuarine and freshwater fisheries and post season estimates are made pending returns of angler punch cards.

Coho encountered off the central Oregon coast are comprised mostly of stocks in what is known as the Oregon Production Index (OPI). This index is composed of the total catch of all stocks south of Leadbetter Point, Washington plus escapements of stocks from the Columbia River and coastal streams of Oregon and California. The Oregon Coastal Natural (OCN) aggregate is the largest contributor of natural production to the OPI. Washington coastal and Puget Sound stocks contribute far less than OPI stocks to harvests off the central Oregon Coast and contributions from Canadian and Alaskan stocks are very minor. Serious declines in OCN coho abundance in the last decade led to their listing as "threatened" under the Endangered Species Act (ESA) in 1998. In response to this serious decline in OCN coho, the PFMC and the state of Oregon eliminated ocean and freshwater fisheries that target those stocks. However, in the mid-

1990's Oregon began mass marking all coho produced in Columbia River and coastal hatcheries with the goal of developing selective fisheries for abundant returns of adipose fin-clipped hatchery fish. Beginning in 1999, the PFMC has approved modest selective fisheries off the central Oregon coast for coho with healed adipose fin-clips. The selective fishery off the central Oregon coast in 2001 caught approximately 55,000 adipose fin-clipped coho (100% of the quota for the fishery).

Although mass marking of hatchery fish has enabled resumption of targeted coho fisheries off the Oregon coast, PFMC management goals with respect to limiting impacts on OCN coho remain very conservative. In 1994, the PFMC began managing fisheries to limit overall impacts on OCN coho (including impacts in Canadian and Alaskan fisheries that are outside the PFMC process) to less than 13%. In 1998, the PFMC adopted a very structured management matrix for OCN coho (Amendment 13 to the Salmon Management Plan) that bases allowable impacts on observed parental spawner abundance and marine survival of returns based on jack:smolt ratios at hatcheries in the previous year. Consistent with criteria in Amendment 13, PFMC fisheries in 1998, 1999, and 2000 were managed to constrain overall coastwide fishery related impacts (including incidental impacts in selective fisheries) to $\leq$10-13%. In 2000 an ad hoc committee of the PFMC (Amendment 13 Work Group) completed a mandated review of the management matrix in Plan Amendment 13. Based on Amendment 13 Work Group recommendations for parental spawner and marine survival levels experienced by 1997 brood year returns, allowable overall coastwide fisheries related impacts to OCN coho in 2001 fisheries were further constrained to the range of 0-8%. A September 10, 2001 ruling by the United States District Court for the District of Oregon set aside the 1998 listing of OCN coho under the ESA. However, the stocks remain depressed and the PFMC will continue to manage under criteria in Amendment 13 as modified by the Amendment 13 Work Group.

North of Cape Falcon Ocean Fisheries

Management objectives for chinook fisheries in this area are to satisfy standards for ESA-listed stocks, and to the extent possible, provide for viable ocean and in-river fisheries while protecting depressed Columbia River natural stocks and meeting hatchery fall chinook brood stock needs. Lower Columbia River and Bonneville Pool hatchery fall chinook have historically been the major stocks contributing to ocean fishery catches in the North of Cape Falcon area. In 2001, fisheries were structured to reduce impacts on Puget Sound chinook, listed as threatened under the Federal ESA, by constraining catches in areas of highest concentrations. The non-Indian commercial troll fishery was closed in parts of management area 4 and 3 ("Cape Flattery Control Zone") for this purpose.

Management objectives for ESA-listed stocks, especially OCN coho, and low abundance levels of lower Columbia River hatchery chinook defined restrictions implemented for ocean fisheries in this area and for fisheries in side waters of Puget Sound and the Columbia River.

Non-treaty Troll Fishery

The preliminary estimates of non-tribal harvest in the 2001 North of Falcon troll fishery are 12,006 chinook and 18,516 coho. The chinook catch represents 81% of the 14,750 chinook harvest quota, with 8,652 chinook harvested in the May1-June15 fishery and the remaining 3,354 harvested south of the Queets River in August and September. The coho catch represents harvest in a mark-selective fishery (healed adipose fin-clips) south of the

Queets River in August and September. Total landings were 88% of the 21,000 coho harvest quota.

Recreational Fisheries

Columbia Ocean Area (including Oregon)

Ocean Area 1 (Columbia Ocean Area) opened for recreational salmon fishing on Sunday, July 1 with a quota of 112,500[1] coho and a guideline of 7,750 chinook. Another 20,000 coho were transferred from the non-treaty troll fishery to the Area 1 recreational fishery near the end of August for a total season quota of 132,500 coho. Beginning the week of September 3, the ocean Area 1 fishery was open 7 days per week, with that portion of the area between North Head and Klipsan Beach, and the area south of Tillamook Head closed to salmon fishing. The fishery closed on Sunday, September 30. The catch estimate for Area 1 through Sunday, September 30 is 7,680 chinook (99% of the guideline) and 115,460 coho (87% of the quota). A total of 38 pink have also been landed.

Westport

Ocean Area 2 (Westport) opened for recreational salmon fishing on Sunday, July 1 with a quota of 83,250 coho and a guideline of 19,450 chinook. Beginning the week of September 3, the ocean Area 2 fishery was open 7 days per week. The fishery closed on Sunday, September 30. The catch estimate for Area 2 through Sunday, September 30 is 15,746 chinook (81% of the guideline) and 69,177coho (83% of the quota). A total of 887 pink have also been landed.

La Push

Ocean Area 3 (La Push) opened for recreational salmon fishing on Sunday, July 1 with a quota of 5,350 coho and a guideline of 1,000 chinook[2]. Beginning September 24, the open area was restricted to a "bubble" area[3] around the mouth of the Quileute River; this area is open through October 21. The catch estimate for Area 3 through Sunday, September 30 is 477 chinook (48% of the guideline) and 3,276 coho (61% of the sub-quota). A total of 150 pink have also been landed.

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[1]A sub-quota of 102,500 coho was in effect in Area 1 for the time period July 1 - September 3. Effective September 4, the fishery was scheduled to reopen through September 30, or until attainment of the total area quota of 112,500 coho. An in-season transfer of 20,000 coho from the non-Treaty troll fishery increased the overall Area 1quota to 132,500coho.

[2]Sub-quotas of 5,350 coho and 1,000 chinook are in effect in Area 3 for the time period July 1 - September 23. Effective September 24, the fishery reopens through October 21, or until attainment of the total area quota of 5,850 coho or 1,100 chinook.

[3]Inside an area defined by a line from Teahwhit Head northwest to "Q" buoy to Cake Rock, then true east to the shoreline.

Neah Bay

Ocean Area 4 (Neah Bay) opened for recreational salmon fishing on Sunday, July 1 with a quota of 23,400 coho and a guideline of 1,700 chinook. The fishery closed on Sunday, September 30. The catch estimate for Area 4 through Sunday, September 30 is 1,520 chinook (89% of the guideline) and 17,806 coho (76% of the quota). A total of 2,863 pink have also been landed.

Treaty Troll Fishery

The treaty troll fishery was structured for a chinook quota of 37,000 and a coho quota of 90,000. The season was comprised of a May/June chinook directed fishery and a July through September 15 all species fishery. The season concluded with a catch of 28,100 chinook and 57,500 coho.

Columbia River Fisheries

Treaty-Indian and non-Indian commercial and sport fisheries for chinook and coho in 2001 occurred during the winter/spring (February-May) and during the fall (August-October). All fisheries during both time frames were constrained by impacts on ESA-listed stocks. Winter/spring fisheries were constrained by impacts on ESA-listed upper Columbia River and Snake River spring chinook. Non-Indian fall fisheries were constrained by impacts to ESA-listed Snake River fall chinook while treaty-Indian fall fisheries were constrained by impacts to ESA-listed Snake River Group B steelhead. ESA-listed Snake River fall chinook were not a constraint to 2001 treaty-Indian fall fisheries because the Group B steelhead impact guideline was reached first.

The non-Indian winter (February-March) commercial fishery accounted for landings of 5,700 spring chinook in a non-selective fishery while a limited experimental selective fishery accounted for an additional 1,800 adipose fin-clipped chinook during the spring period (April-May). The 2001 mainstem recreational fishery operated under selective fishery regulations and accounted for 25,700 fin-clipped chinook landed during February-April from 172,300 angler trips. A large treaty Indian commercial fishery occurred during the spring of 2001 (first since 1977) accounting for 42,000 chinook landed in addition to ceremonial and subsistence catches of 12,000 spring chinook.

The non-Indian fall (August-October) commercial fishery was directed primarily at surplus hatchery coho with some limited chinook directed fishing during the early and late segments of the fall chinook run timing. Coho directed commercial fishing periods occurred during seven weeks from September 17 through October 31 while limited chinook directed fishing occurred during eight days in August and nine days in late September through early October. Preliminary estimates of landings for the fall season of the non-Indian commercial fishery were 240,000 coho and 22,000 chinook.

Fall sport fisheries in the Columbia River in 2001 consisted of the Buoy 10 fishery in the estuary and the mainstem fishery. Although both fisheries were planned to continue throughout the fall season, emergency restrictions were enacted due to ESA constraints. The Buoy 10 fishery was closed to chinook retention from August 30-September 14. The total catch in the Buoy 10 fishery was 12,000 chinook and 130,000 coho from 121,000 angler trips. Preliminary catch in the mainstem Columbia River sport fishery was 9,100

chinook and 3,000 coho from 90,400 angler trips. Only coho with healed adipose fin-clips could be retained in these fisheries.

Treaty Indian commercial fisheries above Bonneville Dam occurred from late August through late September with ceremonial and subsistence fishing occurring from late August through October. A preliminary total of about 113,900 fall chinook were harvested along with about 5,500 coho and 28,800 steelhead. As in the previous five years, a large portion of the catch was not sold to commercial fish buyers, but directly to the public in an effort to maximize the economic benefits to the treaty fishers.

Washington Coastal Fisheries

North Washington Coastal Rivers

The north coastal rivers net harvest (all by tribal fisheries) includes catch for the Waatch, Sooes, Quillayute, Hoh, Queets, Moclips, and Copalis rivers. The 2001 commercial net fisheries in north coastal rivers have harvested an estimated 8,300 chinook and 70,900 coho through November.

Sport fisheries directed at salmon in this region were implemented based upon pre-season, tribal-state agreements and subject to in-season adjustment. Estimates of sport fishery catches are not available until approximately one year following the calendar year of the fishery.

Grays Harbor

Harvest for Grays Harbor includes catch from both the Humptulips and Chehalis rivers. The 2001 tribal net fisheries have harvested an estimated 3,900 chinook and 15,800 coho through November. The 2001 non-Indian commercial net harvest in Grays Harbor was at least 2,500 chinook and 3,200 coho salmon. Recreational fishery harvest estimates are unavailable.

Puget Sound Fisheries

Puget Sound marine fisheries of interest to the Pacific Salmon Commission in 2001 were regulated to meet conservation and allocation objectives for chinook, coho, pink, chum and sockeye salmon stocks, per tribal-state agreement. For Puget Sound chinook, listed under the ESA, fisheries were managed according to the state and tribal joint resource management plan, the Puget Sound Comprehensive Chinook Management Plan (PSCCMP). This management plan was determined by the National Marine Fisheries Service to be consistent with requirements specified under the ESA 4(d) Rule. The PSCCMP defines limits to total exploitation rates for natural stocks. Release requirements were applied to many recreational and commercial fisheries for chinook and for chum salmon to protect ESA-listed summer chum.

In-season adjustments to fishery plans were implemented where information was available to indicate significant changes in pre-season expected returns to terminal areas, including Fraser Panel regulated fisheries in the Strait of Juan de Fuca and San Juan Islands.

Strait of Juan de Fuca Recreational

Recreational fishing was closed to chinook salmon retention in catch reporting Areas 5 & 6 except the period from February 16 to April 10 and during the month of November. In addition, for catch Area 5 only, during the month of July, chinook salmon landings were allowed up to a quota of 2,000 fish. Selective fishing for marked hatchery coho was open from July 1 through September 30, except that during the month of September, in Area 5 only, the mark-selective restriction was lifted.

During the period July 1 through September 30, the total harvest of chinook salmon in Area 5 was estimated as 2,510 fish with 71,886 angler trips. Additionally, 66,879 coho, and 17,108 pink salmon were harvested. A total of 159,726 salmon were released by anglers as a result of bag limit restrictions or sorting of kept fish. Of these released salmon, 130,827 were coho salmon.

Strait of Juan de Fuca Net

Preliminary estimates of the 2001 catch in Strait of Juan de Fuca tribal net fisheries directed at sockeye salmon are 800 chinook and 2,400 coho salmon. An additional 50 chinook and 9,300 coho were taken during the coho management period.

Strait of Juan de Fuca Treaty Troll (Area 4B, 5, and 6C)

The preliminary estimates of the 2001 Strait of Juan de Fuca treaty troll fishery are 2,300 chinook and 0 coho through November. The tribal catch estimates from this area do not include catches from Area 4B during the May-September PFMC management period, which have been included in the North of Cape Falcon troll summary.

San Juan Islands Net (Area 7 and 7A)

Preliminary estimates of the 2001 catch in Strait of Juan de Fuca tribal net fishery directed at sockeye salmon are 900 chinook and 300 coho salmon. Non-Indian landings totaled approximately 100 chinook and 400 coho salmon. The non-Indian reef net fishery was required to release all unmarked coho salmon in fisheries that followed relinquishment of Fraser Panel control (mid-September).

San Juan Islands Recreational

The southern and southeastern (Rosario Strait) portions of this catch area were again closed in 2001 to protect migrating, mature Puget Sound chinook salmon. The remaining area was opened for retention of chinook and coho salmon (one fish bag limit) from July 1 to September 30. Release of unmarked coho salmon was required for the months of August and September. Chinook retention also was allowed in the entire area from February 16 - April 10 and for the month of November. No estimate of catch is available at this time.

Inside Puget Sound (Areas 8-13) Recreational

Puget Sound Marine Net

Preliminary estimates of the 2001 tribal and non-tribal net fishery harvests in Puget Sound marine areas other than 4B, 5, 6, 6A, 7, and 7A are 49,000 chinook and 154,400 coho, mostly taken in terminal areas where harvestable abundance was identified. Additional tribal net harvest of coho and chinook occurred in river fisheries.

Table 15. Preliminary 2001 landed chinook catches for Washington and Oregon fisheries of interest to the Pacific Salmon Commission (rounded to nearest 100)[1]

Fishery	Gear	2001 Tribal	2001 Non-Tribal	2001 Total
Ocean Fisheries				
Troll				
Cape Flattery and Neah Bay (Areas 4 & 4B)[2]	Troll	27,500	5,600	33,100
Quillayute (Area 3)	Troll	0	1,100	1,100
Grays Harbor (Area 2)	Troll	600	13,000	13,600
Col. R. (OR Area 2 and WA Area 1)	Troll	0	6,600	6,600
Sport				
Cape Flattery and Neah Bay (Areas 4 & 4B)	Sport		1,500	1,500
Quillayute (Area 3)	Sport		500	500
Grays Harbor (Area 2)	Sport		15,700	15,700
Col. R. (OR and WA Areas 1)	Sport		7,700	7,700
Inside Fisheries				
Troll				
Strait of Juan de Fuca[3] (Areas 4B, 5 & 6C)	Troll	2,300	0	2,300
Sport				
Juan de Fuca (Areas 5 and 6)	Sport		2,500	2,500
Puget Sound Sport (Areas 6-13)	Sport		NA	NA
Columbia River Sport[4]	Sport		19,300	19,300
Net				
Cape Flattery (Area 4)	Net	<50	0	<50
North WA Coastal River	Net	8,300	0	8,300
Grays Harbor (Areas 2A-2D)[5]	Net	3,900	2,500	6,400
Columbia River Net - Winter/Spring	Net	54,000	7,500	61,500
	Sport		25,700	25,700
Columbia River Net - Fall	Net	113,900	22,000	135,900
Strait of Juan de Fuca and Areas 6 and 6A	Net	900	0	900
Areas 7 and 7A	Net	900	100	1,000
Puget Sound Marine	Net	49,000	0	49,000

Table 16. Preliminary 2001 landed coho catches for Washington and Oregon fisheries of interest to the Pacific Salmon Commission (rounded to nearest 100).

Fishery	Gear	2001 Tribal	2001 Non-Tribal	2001 Total
Ocean Fisheries				
Troll				
Cape Flattery and Neah Bay (Areas 4 and 4B)[2]	Troll	57,500	300	22,100
Quillayute (Area 3)	Troll	0	100	0
Grays Harbor (Area 2)	Troll	0	5,600	2,700
Col. R. (OR Area 2 and WA Area 1)	Troll	0	11,100	14,500
Sport				
Cape Flattery and Neah Bay (Areas 4 and 4B)	Sport		17,800	17,800
Quillayute (Area 3)	Sport		3,300	3,300
Grays Harbor (Area 2)	Sport		69,200	69,200
Col. R. (WA Area 1 and OR Area 2)	Sport		115,500	115,500
Inside Fisheries				
Troll				
Strait of Juan de Fuca (Areas 4B, 5 & 6C)	Troll	0		0
Sport				
Juan de Fuca (Area 5 only)	Sport		29,800	29,800
Puget Sound Sport (Areas 6-13)	Sport		NA	NA
Columbia River Sport[3]	Sport		26,000	26,000
Net				
Cape Flattery (Area 4)	Net	100	0	100
North WA Coastal River	Net	70,900	0	70,900
Grays Harbor (Areas 2A-2D)[4]	Net	15,800	2,500	18,300
Columbia River Net	Net	5,500	240,000	245,500
Strait of Juan de Fuca and Areas 6 and 6A	Net	11,700	0	11,700
Areas 7 and 7A	Net	300	400	700
Puget Sound Marine	Net	154,400	0	154,400

Preliminary Review of 2001 Washington Chum Fisheries of Interest to the Pacific Salmon Commission

November 21, 2001

This summary report provides a preliminary review of the 2001 chum fishing season and is subject to correction and revision as additional information becomes available. Some Washington chum fisheries are still underway, and catch and run size information provided are preliminary data reported through mid-November. This report addresses in

detail only those fisheries of concern under the Pacific Salmon Treaty. The mixed-stock fisheries in United States (U.S.) waters that are addressed in the chum annex of the Pacific Salmon Treaty are those in the western Strait of Juan de Fuca (areas 4B, 5 and 6C), the San Juan Islands (area 7) and the Point Roberts area (area 7A). Other chum fisheries in Washington waters are primarily terminal fisheries, which harvest runs of local origin.

Mixed Stock Fisheries

Areas 4B, 5, 6C

As in previous years, the chum fishery in areas 4B, 5, 6C was restricted to Treaty Indian gill net gear only. The commercial chum fishery began the week of October 7 and remained open 5 days per week until October 26 when the fishery was expanded to 7 days per week. The Strait of Juan de Fuca chum fishery was closed for the season on November 9. No test fisheries for collection of GSI samples were conducted, and no samples for GSI analysis were collected from the commercial catch during 2001.

Some incidental catches of chum salmon occurred in fisheries prior to the fall chum management period. Most of these catches occurred just prior to the chum management period in directed coho fisheries, and totaled 329 fish. Effort in the chum fishery was again quite limited due to low prices and poor weather conditions. The commercial harvest recorded from the fall chum management period was 9,882 chum, bringing the total chum catch in areas 4B, 5, 6C, reported through November 19, to 10,211.

Areas 7 and 7A

Preseason forecasts were for only limited numbers of harvestable fall chum returning to Puget Sound, however in-season updates of abundance indicate runs significantly stronger than anticipated. The preseason forecast for the Canadian chum run returning to Johnstone Strait was for 2.3 million chum, which is less than the 3.0 million required for any significant commercial fishery. Limited commercial fisheries in early October, and test fishing results from mid-September through early November, indicated a chum return somewhat larger than the preseason forecast. The Johnstone Strait run size estimate was updated in-season to 2.6 million.

The chum annex provides for a U.S. harvest in areas 7 and 7A of no more than 20,000 chum when the Johnstone Strait run size is less than 3.0 million, and the catch in Johnstone Strait is less than 280,000 chum. Based on updated run sizes that remained below 3.0 million, there was only limited chum fishing conducted in areas 7 and 7A in 2001. There were only 339 chum reported caught in these areas prior to October 1, and those were taken incidental to sockeye fisheries. A non-treaty reef net fishery was opened in late-September, but did not allow the retention of chum salmon until October 1. That fishery remained open until November 10, but fishing was poor during the chum management period and no chum catch occurred after mid-October. The total chum catch by reef nets was 3,160 fish.

Puget Sound Terminal Area Fisheries and Run Strength

Preseason forecasts for chum returns to Puget Sound were for a fall chum run totaling only about 800,000. Most Puget Sound chum runs have been updated in-season

indicating overall returns significantly larger than expected preseason. Current in-season estimates are for a total Puget Sound run of about 2.0 million chum. Some Puget Sound chum fisheries are still underway, and additional in-season estimates of abundance may be made. At this time, spawning escapement estimates are not available, but early indications are that large numbers of chum salmon are present in most estuarine and freshwater areas.

Table 17. Preliminary 2001 chum harvest in selected Puget Sound catch reporting areas.

Week	Areas 4B,5,6C Treaty Indian	Areas 7 & 7A Treaty Indian	Areas 7 & 7A Non-Indian	Areas 7 & 7A Total
Prior to 10/7	329	339	735	1,334
10/7 – 10/13	2,764	0	1,053	1,053
10/14 - 10/20	1,659	0	1,112	1,112
10/21 - 10/27	2,374	0	0	0
10/28 - 11/3	1,379	0	0	0
11/4 - 11/10	1,706	0	0	0
Season Totals	10,211	339	3,160	3,499

Season Review and Highlights, 2001

U.S. Fraser River Sockeye and Pink Salmon Fisheries

The 2001 Fraser River Panel season was the third implemented under the renewed Annex IV of the Pacific Salmon Treaty (PST). The treaty establishes a bilateral (U.S. and Canada) Fraser River Panel (Panel). The Panel develops a pre-season management plan and in-season approves fisheries directed at sockeye and pink salmon bound for the Fraser River within Panel Area waters (Figure 1). In partial fulfillment of Article IV, paragraph 1 of the PST, this document provides a season review and highlights of the 2001 U.S. Fraser River salmon fisheries authorized by the Panel.

Pre-season Planning

The Department of Fisheries and Ocean, Canada (DFO) provides pre-season run size forecasts at various probability levels. A forecast with a 50% probability level is the mid-point of the range of possible run sizes. In other words, the actual run size has an equal chance of being either above or below this mid-point. The 2001 pre-season forecast of sockeye salmon at the 50% probability level, all stocks combined, was 12,864,000 sockeye. The total pre-season run size estimate was comprised of the following components: 420,000 Early Stuart, 202,000 Early Summer, 11,714,000 Summer-run, and 528,000 Late-run sockeye salmon. The pre-season pink salmon run size forecast for 2001, at the 50% probability level, was 5,468,000 fish.

Pre-season, DFO predicted a Johnstone Strait diversion rate for sockeye at 32%, based on a model that used mean sea surface temperatures measured at Kains Island for April and May of 2001. The Johnstone Strait diversion rate is the percentage of the sockeye salmon, which travel through the Johnstone Strait instead of the Strait of Juan de Fuca on

their migration to the Fraser River. The Panel uses the run-size forecast and the predicted diversion rate during the pre-season planning process to develop management plans.

In 2001, during the pre-season planning process, the Panel struggled to reach an agreement on how to manage Panel Area fisheries - in particular, how to harvest the forecasted surplus of Summer-run sockeye while conserving Late-run and Early-Summer sockeye. These runs have an overlapping run timing, which makes it difficult to harvest Summer-run sockeye salmon while minimizing impacts on Late-run sockeye salmon. Five pre-season planning meetings were held in 2001: on April 17 and 18, May 7 to 10, June 4 to 6, June 20 to 22, and June 26 to 29. The Panel could not come to an agreement on a fishing plan during these pre-season planning meetings and ultimately sought Pacific Salmon Commission (Commission) direction.

As provided for in Article XII of the PST, disputed issues were brought before the Commission on June 27, 2001 for resolution. The Commission issued a letter of agreement that provided directives to the Panel on the disputed issues. Following the Commission's directives, the Panel adopted a pre-season fishing plan on June 28, 2001. The following is an abbreviated presentation of the 2001 Fraser River Panel Management Plan:

1. International shares: As outlined in the Appendix to Annex IV, Chapter 4 paragraph 2, in 2001 the U.S. share was 18.4% of Total Allowable Catch (TAC) of Fraser River sockeye salmon and 25.7% of TAC of Fraser River pink salmon.

2. Payback: As outlined in the Appendix to Annex IV, Chapter 4, paragraph 8, the U.S. was required to transfer a portion of its sockeye salmon TAC to Canada for past years harvest which was above its share. This is referred to as "Payback". In 2001, the U.S. Payback was to be up to 57,000 sockeye salmon due to an overage in 2000. The Panel could not agree upon a specific Payback level as the countries had unresolved differences in how 2000 sockeye salmon TAC should be computed. In 2001, the U.S. was to receive 22,000 pink salmon TAC payback from Canada because of catch imbalance in 1999.

3. Conservation concern: The Panel assumed that Late-run sockeye salmon would migrate into the Fraser River early, as they have in recent years, and that a significant proportion of the run would not survive to successfully spawn. In accordance with the Commission agreement of June 27, 2001, the maximum exploitation rate on Late-run sockeye was set at 17% while the maximum exploitation rate on Summer-run sockeye was 60%.

4. The Commission directed that the U.S. share in 2001 would not be adjusted post-season as a consequence of Canadian domestic policies that resulted in Canada not achieving its share (81.6%). Specifically, the final post-season calculations of U.S. TAC would not be reduced if Canada made domestic choices to not harvest available TAC in-season.

5. A total of 12,864,000 sockeye and 5,468,000 pink salmon were forecasted at the 50% probability level. Pre-season fishery contingency plans were also constructed at 75% probability level of the forecasted run-size to address uncertainty in the forecasts. A forecast with a 75% probability level represents a point on the range of possible run sizes in which the actual return would most likely fall (75% of the time) above that

point. Run sizes at the 75% probability level were predicted to be 6,797,000 sockeye and 4,049,000 pink salmon.

6. The Panel had pre-season concerns about lower than normal Fraser River basin snow pack levels in 2001. Low snow pack conditions increased the likelihood of low flow and warm water conditions during the sockeye salmon migration. Warm water temperatures contribute to the mortality rate of migrating salmon. The Panel directed the Fraser River Panel Technical Committee to work on a model to predict mortality associated with extreme environmental conditions.

7. Pink salmon: With a forecasted run size of 5,468,000 fish, no pink salmon directed fisheries were planned. Run size was to be monitored in-season, with increases in run size potentially triggering directed fisheries. It was anticipated that conservation concerns for Late-run sockeye would impact any pink salmon directed fisheries.

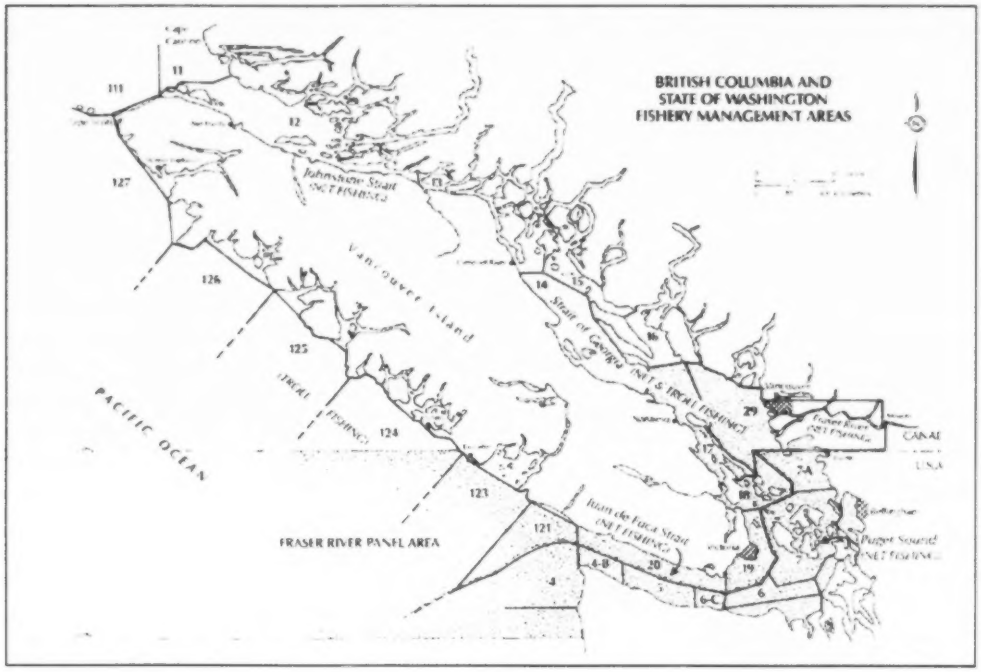


Figure 1. British Columbia and State of Washington Fishery Management Areas, 2001.

2001 In-Season Catch and Escapement Estimates:

Final post-season catch and escapement estimates are not available at this time. The following catch and escapement information should be considered preliminary [4].

Table 18 contains the preliminary sockeye salmon catches by British Columbia and Washington Fishery Management Area (Figure 1). Table 20 is the 2001 estimated gross

[4] Data provided by Pacific Salmon Commission staff on October 29, 2001.

escapement (includes upriver harvest) of Fraser River sockeye salmon by run. All sockeye salmon target gross escapement goals were achieved or exceeded in 2001 (Table 20). The total Fraser River run size estimate (catch plus escapement) is 6,194,100 sockeye salmon with a U.S. commercial and ceremonial and subsistence (C&S) combined catch of 250,500 fish.

The last in-season estimate of the 2001 pink salmon run size was 10 million fish, with a U.S. commercial, C&S, and recreational combined catch of 365,000 fish (Table 19).

Table 18. Preliminary sockeye salmon catches, Fraser River, 2001.

Fishery	Area	Gear		Fraser Sockeye Catch
Commercial Catch:				
Canada				
	A & C	Areas 1-10	Net	0
	F	Areas 1-10	Troll	0
	G	Areas 123-127,11-12	Troll	17,100
	B	Areas 11-16	PS	29,200
	D	Areas 11-16	GN	93,900
	H	Areas 12-16	Troll	35,500
	H	Areas 18-29	Troll	24,900
	B	Area 20	PS	45,900
	E	Area 29	GN	12,000
			Canadian Total:	258,500
United States				
	Alaska		Net	0
	Washington			
		Treaty Indian		
		(T.I.) Areas 4B/5/6C	Net	34,800
		T.I. Areas 6/7/7A	Net	125,900
		T.I Total:		160,700
		Non-Indian		
		(N.I.) Areas 7/7A		
		Purse Seine	44,600	
		Gill Nets	25,300	
		Reef Nets	9,200	
		N.I Total:		79,100
			Washington Total:	239,800
			U.S. Total:	239,800
Non-commercial Catch:				
	PSC Test			92,200
	Other Test			30,300
	Canadian Selective			33,700
	Fraser River Aboriginal			656,400
	Areas 12-124 Aboriginal			174,300
	Recreational			74,500
	Charter			11,700
	U.S. TI Ceremonial			10,700
			Non-commercial Total:	1,084,200
			Total U.S. Commercial and Ceremonial:	250,500
			Total Sockeye Catch:	1,582,500

Table 19. Preliminary pink salmon catches, Fraser River, 2001.

Fishery	Area	Gear			Fraser Pink Catch
Commercial Catch					
Canada					
A & C	Areas 1-10	Net			0
F	Areas 1-10	Troll			0
G	Areas 123-127, 11-12	Troll			12,900
B	Areas 11-16	PS			518,900
D	Areas 11-16	GN			4,500
H	Areas 12-16	Troll			68,900
H	Areas 18-29	Troll			100
B	Area 20	PS			8,100
E	Area 29	GN			0
				Canadian Total:	613,400
United States					
Alaska		Net			0
Washington					
	Treaty Indian				
	(T.I.) Areas 4B/5/6C	Net			4,400
	T.I. Areas 6/7/7A	Net			95,800
			T.I Total:		100,200
	Non Indian				
	(N.I.) Areas 7/7A				
		Purse			
		Seine		246,700	
		Gill Nets		100	
		Reef Net		4,500	
			N.I. Total		251,300
				Washington Total:	351,500
				U.S. Total:	351,500
Non-commercial Catch					
PSC Test					24,900
Other Test					12,600
Canadian Selective					0
Fraser River Aboriginal					117,100
Areas 12-124 Aboriginal					15,900
Canadian Recreational					72,800
Charter					2,300
U.S. Ceremonial					800
U.S. Recreational					12,700
				Non-commercial Total	259,100
		Total U.S. Commercial & Ceremonial			365,000
			Total Pink Salmon Catch:		1,224,000

2001 Highlights and Management Challenges:

1. The 2001 estimated return of 6,194,100 sockeye salmon was only 48% of the pre-season forecast, at the 50% probability level (Table **4**). The lower than expected total return of sockeye salmon can be primarily attributed to a lower than expected Summer-run sockeye salmon return. It is suspected that poor marine survival is the reason for the weak return of Summer-run sockeye in 2001.

Table 20. Preliminary gross sockeye salmon escapement (includes upriver harvest), by run, Fraser River, 2001.

Gross Escapement (includes Pitt River sockeye)						
Run	Sockeye Stock/Group	Escapement Target	Mission Escapement	Escapement Below Mission	Total Escapement	Percent Of Target
Early Stuart	Early Stuart	225,000	219,200	2,000	221,200	98%
Early Summer	Early Summer	210,000	281,100	12,100	293,200	140%
Summer	Chilko/Quesnel	3,934,000	3,504,200	117,400	4,340,800	110%
	L.Stu./Stel.		685,100	40,100		
Late	Birk./Adams/ Cult	468,000	120,700	2,100	484,900	104%
	Adam/LShu					
	Weav/L.Misc.		345,300	7,800		
				Total	5,340,100	

2. The Johnstone Strait sockeye salmon diversion rate in 2001 is estimated to have been approximately 20%, considerably below the pre-season diversion rate forecast of 32%.

3. The last 2001 in-season run size update of 10 million pink salmon was 82% above the pre-season forecast, at the 50% probability level. The 2001 pink salmon return provided limited U.S. commercial opportunities. Poor market conditions significantly impacted the ability of the U.S. commercial fisheries to harvest the surplus pink salmon.

Table 21. Pre-season forecasts compared to estimated actual 2001 run sizes

Timing Group	50% Probability Forecast (Pre-season)	Actual Return In-season (Estimated)	Comparison: Actual vs. Forecast
Early Stuart	420,000	226,200	54%
Early Summer	202,000	313,400	155%
Mid Summer	11,714,000	5,092,800	44%
Late Summer	528,000	561,700	106%
TOTAL	12,864,000	6,194,100	48%

4. To minimize impacts on Late-run sockeye salmon during pink salmon directed commercial fisheries, the U.S. took an unprecedented action and required purse seines and reef nets to release all sockeye salmon. Also because of unique circumstances in 2001, the U.S. chose not to propose commercial gill net fisheries directed at pink salmon.

5. Catch Allocation: Domestic and international harvests were significantly impacted by the 52% lower than forecasted return of the Summer-run sockeye, conservation concerns for the Late-run sockeye, and the poor market conditions for pink salmon. In particular, the U.S. could not harvest their allocation of the harvestable surplus of pink salmon because of poor market conditions and Canada chose to restrict pink harvest because of domestic sockeye allocation concerns.

6. Expected problems with high water temperatures did not materialize in 2001. As a result of cool and rainy weather pattern, environmental conditions (water level and temperature) largely remained favorable for the sockeye salmon migration in the Fraser River in 2001. Weekly updates on the environmental conditions were provided to the Panel by DFO throughout the sockeye salmon migration. It is noted that the Fraser River Technical Committee is in the process of developing a model to predict mortalities associated with extreme, in-river environmental condition.

7. In-season, the Panel attempted to monitor the timing of the 2001 Late-run sockeye salmon migration into the Fraser River with limited stock identification information. Like recent years, this information collected by DFO and Commission staff indicated that the 2001 Late-run sockeye salmon entered the Fraser River much earlier than normal. During 1996 to 2000, early river entry of Late-run sockeye salmon was associated with high pre-spawning mortality both en route to and near spawning areas.

Summary:

Run Size: The 2001 estimated return of 6,194,100 sockeye salmon was only 48% of the pre-season forecast level. The 2001 estimated return of 10 million pink salmon was 183% of the pre-season forecast.

Catch: Preliminary catch estimates for U.S. fisheries in 2001 were a total of 250,500 sockeye and 365,000 pink salmon destined for the Fraser River. The lower than forecasted return of the Summer-run sockeye, conservation concerns for the Early Summer and Late-run sockeye, and the poor market conditions for pink salmon significantly reduced the harvest of salmon within the Panel Area.

Escapement: All targeted gross escapement goals were achieved or exceeded in 2001. The number of Late-run sockeye salmon surviving to successfully spawn will likely be less than desired because of expected pre-spawning mortality associated with the 2001 early river entry pattern.

C. 2001 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

Fisheries in 2001 were conducted according to Annex IV arrangements under the Pacific Salmon Treaty that was agreed to between Canada and the United States in June, 1999. The

conservation-based approach commits the two Parties to abundance-based management for all stocks covered by the Treaty.

Catches reported below provide the best information available to date, and may change when all catch information for 2001 has been received. The catches are based on in-season estimates (hailed statistics), on-the-grounds counts by Fisheries and Oceans Canada management staff and independent observers, logbooks, dockside tallies, and landing slips (aboriginal fisheries), fish slip data (commercial troll and net), and creel surveys, logbooks and observers (sport and commercial).

Annex fisheries are reported in the order of the Chapters of Annex IV. Comments begin with expectations and management objectives, followed by catch results by species, and where available and appropriate, escapements. The expectations, management objectives, catches and escapements are only for those stocks and fisheries covered by the Pacific Salmon Treaty (PST); domestic catch allocations have been excluded. A table attached at the end of this report summarizes 1992-2001 catches in Canadian fisheries that have at some time been under limits imposed by the Pacific Salmon Treaty.

Transboundary Rivers

Stikine River

Canada developed a fishing plan for the Stikine River based on the catch sharing arrangements outlined in Annex IV, Chapter 1, Paragraph 3 of the PST. Accordingly, the objectives of the 2001 management plan were as follows: to harvest 50% of the total allowable catch (TAC) of Stikine River sockeye salmon in existing fisheries; to allow additional sockeye harvesting opportunities in terminal areas to target sockeye salmon that were surplus to spawning requirements; to harvest 4,000 coho salmon in a directed coho salmon fishery; and, to allow chinook salmon to be taken in the commercial fishery only as an incidental catch in the directed fishery for sockeye salmon. The 2001 season opened on 24 June, statistical week 26, and ended in statistical week 36 (08 Sept). To address conservation concerns for Tahltan Lake sockeye salmon, commercial gear was limited to one net and the lower Stikine commercial fishing area was reduced.

Sockeye salmon

The preseason forecast of returning Stikine sockeye salmon, as provided by the Transboundary Rivers Technical Committee (TRTC), was 113,000 fish, including 28,000 Tahltan Lake origin sockeye salmon (23,600 wild and 4,400 enhanced), 35,000 enhanced Tuya Lake origin sockeye, and 50,000 non-Tahltan wild sockeye salmon. For comparison, the previous 10-year (1991-2000) average terminal[5] run size was approximately 203,000 fish.

A total of 25,372 sockeye was caught in the combined Canadian commercial and aboriginal fishery; 78% of the catch occurred in the commercial fishery. The total catch was approximately 43% below the previous 10-year average (1991-2000) of 44,400 sockeye. The preliminary estimate of the total contribution of sockeye from the Canada/U.S. enhancement program to the combined Canadian aboriginal and commercial fisheries is

[5] Terminal run size estimate excludes U.S. interceptions that occur outside of the District 108 and 106 gillnet fisheries.

13,590 fish, close to 54% of the catch. Fishing effort in the commercial fishery was significantly reduced in 2001 due to conservation concerns. A total of 23 days was fished, 35% below average, and the total effort amounted to 173 boat-days, which was 60% below average. The lower Stikine River commercial fishing area was reduced to include the Stikine River from the mouth of the Porcupine River downstream to the Canada US border. Fishing gear was reduced from the two nets (drift and set gillnet) typically fished in the past several years, to one net (drift or set gillnet). Due to poor markets and high water, no salmon were taken by the Tahltan First Nation under the "Excess Salmon to Spawning Requirements License" (ESSR) which permitted the terminal harvest of enhanced sockeye in the Tuya River.

A total of 14,811 sockeye salmon (12,441 wild and 2,370 enhanced) was counted through the Tahltan Lake weir in 2001. Although this marked a significant improvement over last year, the count fell short of the management target range of 18,000 to 30,000 sockeye salmon and was 57 % below the previous 10-year (1991-2000) average of 34,600 fish. Of the total number of fish enumerated through the weir in 2001, 1,150 females and 1,150 males were collected for hatchery brood stock and 40 sockeye died unspawned in an experimental brood stock holding study. This left a spawning escapement of 12,471 fish.

The spawning escapements for the non-Tahltan and Tuya sockeye stock groups are estimated indirectly by computing the ratio of Tahltan-to-non Tahltan and Tahltan-to- Tuya components in the total in-river sockeye run. Preliminary post-season escapement estimates, based on egg diameter measurements and otolith thermal mark ratios, include approximately 33,400 non-Tahltan fish and 26,000 Tuya fish. The preliminary estimate for the non-Tahltan sockeye escapement is within the target escapement goal range of 20,000 to 40,000 for this stock grouping, and is 12 % below the previous 10-year (1991-2000) average of 38,000 sockeye. The final postseason estimate will be computed after the results from postseason stock identification studies have been completed. Aerial surveys of non-Tahltan sockeye escapement index areas indicated an above average number of spawners in 2001. The cumulative spawning index count of 3,581 sockeye salmon was 440 % above the previous 10-year average.

Based on the inriver run reconstruction of the Tahltan Lake run expanded by run timing and stock ID data in the lower river and estimated harvests of Stikine sockeye in US terminal gillnet fisheries, the preliminary post-season estimate of the terminal sockeye run size is approximately 129,000 fish. This estimate includes 32,000 Tahltan Lake sockeye, 46,000 Tuya Lake sockeye, and 51,000 sockeye of the non-Tahltan stock aggregate. A Stikine run size of this magnitude is 47 % below the 1991-2000 average terminal run size of 203,000 sockeye salmon. The preliminary post-season estimate of the Canadian TAC for 2001 is approximately 20,300 sockeye, 20% below the actual catch of 25,372 sockeye.

In-season management was influenced significantly by forecasts derived from the Stikine Management Model (SMM), which was updated and refined by the Transboundary Technical Committee (TTC) prior to the season. The model is based on the historical relationship between cumulative catch per unit effort (CPUE) and run size and provides three sets[5] of independently generated forecasts: one set based on US District106 CPUE, another based on Canadian inriver commercial CPUE, and the last based on Canadian test fishery CPUE. Based on the performance of the model using the test fishery data in 2000,

[5] Each set of forecasts includes predictions of the terminal run size of all Stikine sockeye, the Tahltan stock, the Tuya stock and the mainstem stock conglomerate.

the TTC decided to depend solely on the 2001 test fishery performance in the generation of stock size estimates.

The in-season forecasts exhibited a wide range in 2001. The run size and TAC projections that were selected from the SMM peaked with an in-season estimates of 220,532 total run and 55,900 Canadian TAC in week 29 (week ending July 21). The final in-season forecast generated by the SMM indicated a run size of approximately 164,000 sockeye and a TAC for Canada of approximately 39,200 sockeye. According to this forecast, the Canadian catch was under the Canadian TAC by about 13,800 sockeye.

The sockeye mark-recapture program initiated in 2000 continued in 2001 to examine the feasibility of developing an alternate abundance-based management regime for Stikine sockeye. The preliminary estimate of the total inriver run size is approximately 132,000 sockeye salmon. This estimate is slightly more than the inriver run estimate of 103,000 sockeye, which is based on the traditional method of reconstructing the inriver Tahltan run then expanding it using stock ID and run timing data. Further analysis is required to investigate which estimate should be used as the final post season estimate.

Coho salmon

Low fishing effort, combined with poor coho salmon prices, resulted in the second lowest catch of coho salmon since 1979. The total catch for the season was 233 coho salmon, 86% below the 1991-2000 average of 1,700 coho salmon. All of the coho were taken in the lower Stikine commercial fishery.

To assess the abundance of salmon in the lower Stikine River, a coho salmon mark-recapture program was conducted in 2001. The preliminary estimate of the number of fish reaching the border is 79,600 coho salmon. Subtracting the inriver catches of 233 coho in the commercial fishery, and 1,761 coho in the test fishery, leaves a potential total spawning escapement of approximately 77,600 coho. This estimate is well above the interim escapement goal range of 30,000 to 50,000 coho salmon. Very high coho abundance was also observed during surveys of spawning index streams. For example, the combined count from surveys of two reliable indices, Scud and Porcupine rivers, was 1,968 fish, 92 % above the previous 10-year average.

Chinook salmon

The total gillnet catch of chinook salmon in the combined aboriginal and commercial fisheries included 1,411 adults and 102 jacks compared to 1991-2000 averages of 2,063 large chinook and 481 jacks. The count of 9,738 large chinook salmon through the Little Tahltan River weir was the second highest count on record. This count was 66% above the previous 10-year average of 5,868 large fish and 76% above the upper end of the Little Tahltan River escapement goal range of 2,700 to 5,300 chinook salmon. The count of jack chinook salmon was 240 fish, 60% above the previous 10-year average of 150 fish. Preliminary results from the Stikine River chinook mark-recapture program suggest a total system-wide spawning population of approximately 50,000 chinook salmon. This estimate is well above the upper end of the escapement goal range of 14,000 to 28,000 chinook salmon established by the Transboundary Technical Committee.

Joint sockeye enhancement

Joint Canada/U.S. enhancement activities continued in 2001 with approximately 3.3 million sockeye eggs collected at Tahltan Lake and flown to the Port Snettisham Hatchery in Alaska for incubation and thermal marking. The egg collection target of 6.0 million eggs was not achieved primarily because of the inaccessibility of ripe fish.

Approximately 2.2 million fry were out-planted into Tahltan Lake in late May and early June. The fry originated from the 2000 egg-take at Tahltan Lake and were mass-marked in the hatchery with thermally induced otolith marks. For the second consecutive year, no fry were planted into Tuya Lake in 2001.

A total of approximately 1.5 million sockeye smolts was enumerated emigrating from Tahltan Lake in 2001, 25% above the 1991-2000 average smolt count of 1.2 million sockeye. The preliminary estimate of the contribution of enhanced sockeye to this count is 654,000 fish constituting 44% of the total count.

Additional studies were undertaken in 2001 to investigate the feasibility of providing access for sockeye salmon around the Tuya River barrier. Sixty-eight radio transmitters were affixed to sockeye salmon dip-netted from a site in the Tuya River located near the mouth, i.e. at the site of the ESSR fishery. Four groups of tagged fish were air-lifted over the Tuya falls between 15-31 July. An additional 500 unmarked fish were released above the falls along with the radio tagged fish. Aerial tracking was conducted on a weekly basis through early September. A final survey was conducted on 16 October. Of the 68 fish tagged, four fish regurgitated the tag, leaving 64 fish at large. Ten fish were tracked to Tuya Lake. Most fish concluded their migration in the lower 10-50 km stretch of the Tuya River. Eight tags were located in the mainstem Stikine River, with the furthest downstream tag located near the mouth of the Porcupine River.

Engineering studies to determine the feasibility of installing a fish ladder with an incorporated fish trap are scheduled to be conducted in mid November, 2001 at the ESSR fishing site adjacent to the lowermost partial barrier.

Taku River

As with the Stikine River, the fishing plan developed by Canada for the Taku River was based on the arrangements in Annex IV, Chapter 1, Paragraph 3 of the Pacific Salmon Treaty. Accordingly, the plan addressed conservation requirements and contained the following harvest objectives: to harvest 18% of the TAC of wild Taku River sockeye salmon plus up to 20% of the sockeye escapement in excess of 100,000 fish; to attain a 50% share of the catch of enhanced Taku River sockeye; to harvest 3,000 to 10,000 coho salmon, depending on in-river run size forecasts, in a directed coho fishery, and; to allow commercial chinook catches to be taken only incidentally in the directed sockeye fishery. The 2001 season opened on 17 June, statistical week 25, and ended in statistical week 41 (week ending October 13).

Sockeye salmon

The Canadian pre-season forecast was for a sockeye run of approximately 250,000 sockeye, about equal to the previous 10-year average run size of approximately 249,300 sockeye.

The 2001 Canadian sockeye catch totaled 47,473 sockeye, 47,431 of which were caught in the commercial fishery. The commercial catch was a record high and was 68% above the 1991-2000 average of 28,200 sockeye. Enhanced sockeye returns were expected to be low in 2001. The preliminary estimate of the contribution of sockeye salmon from the Canada/U.S. enhancement program to Canadian fisheries is 1,865 fish. The estimated total escapement of 143,300 sockeye salmon in the Canadian section of the Taku River, derived from post-season analyses of Canada/U.S. mark-recapture data, is almost double the mid-point of the interim escapement goal range of 71,000 to 80,000 fish. Compared to previous estimates, the preliminary estimate for 2001 is 43% above the 1991-2000 average of 100,100 sockeye. Based on weir counts, escapements to the Little Trapper, Tatsamenie and Kuthai lake systems were 16,860, 22,575 sockeye and 1,615, respectively. The Little Trapper count was 37% above the 1991-2000 average and the Tatsamenie count was 340% above average. The Kuthai Lake count was 66% below the 1992-00 average.

In-season projections of the total run size, TAC, and total escapement were made frequently throughout the season based on the joint Canada/U.S. mark-recapture program, the estimated interception of Taku River sockeye in U.S. fisheries, the catch in the Canadian in-river fishery, and historical run timing information. The final in-season forecast indicated a total run of approximately 486,900 sockeye and a total spawning escapement of approximately 153,400 sockeye. The preliminary post season estimate of total (terminal) run size is approximately 330,400 wild sockeye with a TAC of 250,400 to 259,400 sockeye. Preliminary analysis indicates that the Canadian sockeye catch represented 17.8-18.5% of the TAC. The preliminary estimate of the total Canadian and US combined harvest of enhanced Taku sockeye salmon is approximately 35,130 fish of which Canada harvested 3.6%.

Coho salmon

The commercial catch of 2,502 coho salmon was approximately 58% below the 1991-2000 average catch of 6,021 coho salmon. Of this harvest, only 772 coho were taken in the directed coho fishery, i.e. after week 33. Preliminary mark-recapture data indicated a spawning escapement of 101,600 coho in 2001. This estimate exceeds the interim escapement goal range of 27,500 to 35,000 coho salmon and is 26% above the previous 10-year average of 82,500 fish. The preliminary estimate of the total in-river run into the Canadian section of the drainage was 104,199 coho. This estimate has yet to be expanded for the portion of the run not covered by the mark-recapture study. According to the new harvest arrangements for Taku coho salmon, Canadian fishers were entitled to harvest up to 10,000 coho at a run size of this magnitude. However, poor prices and market conditions resulted in the fishery being almost completely vacated after week 34, i.e. August 26.

Chinook salmon

The commercial catch of large chinook, 1,520 fish, was 13% below the 1991-2000 average of 1,754 fish; the catch of 181 chinook jacks was also 13% below average. Chinook escapement counts were below average in all six of the Taku River aerial index areas surveyed. The combined index count of 5,242 was 49% below the previous 10-year average of 10,314 chinook. Preliminary estimates derived from the joint Canada/US chinook mark-recapture program indicate a total spawning escapement of approximately 46,950 large chinook salmon, close to the upper end of the escapement goal range of range of 30,000 to 55,000 large chinook salmon.

Joint sockeye enhancement

Joint Canada/US enhancement activities at Tatsamenie Lake continued in 2001 with a total of 4,842,164 eggs being taken from the Tatsamenie Lake stock. The egg-take met the 2001 egg collection target of 4.8 million. Of the total eggs taken, 3,990,956 eggs were delivered to the Snettisham Hatchery in Alaska for incubation and thermal marking. In addition, a total of 850,000 eggs was distributed among three passive flow incubators within Tatsamenie Lake. The experimental in-lake incubation project is part of an ongoing investigation into increasing the lower than expected fry-to-smolt survivals of the outplanted enhanced fry. Small-scale experimental passive flow incubators were previously deployed in Tatsamenie Lake in 1998 and 1999.

During the 2000 Tatsamenie Lake egg-take, a "production scale" incubator was loaded with 244,000 eggs. The resultant fry from the incubator were released in June 2001. At that time, a strontium-induced otolith mark was applied to approximately 165,000 of the fry. The estimated 2000 brood year egg- to- fry incubator survival was 80%.

In June 2001, approximately 2,320,000 fry were transported from Snettisham Hatchery to Tatsamenie Lake in four shipments (2 shipments on June 4 and 2 on June 16). All fry were released into net pens and fed for a period of 10 - 11 days before being released into nearshore areas of Tatsamenie Lake. The 2001 fry feeding procedure was part of an ongoing strategy to increase enhanced fry survival.

The 2001 Tatsamenie sockeye smolt run was estimated to be approximately 75,000, of which 38,000 were age 1+ (brood year 1999) and 37,000 age 2+ (brood year 1998). The proportion of enhanced smolt from the two brood years was 21% and 4% respectively. The 2001 sockeye smolt estimate was the lowest since smolt enumeration began at Tatsamenie Lake in 1996 and is likely a reflection of the low (n=2,100) in-lake sockeye escapement in 1999.

Alsek River

Although catch sharing of Alsek salmon stocks between Canada and the U.S. has not been specified, Annex IV of the Pacific Salmon Treaty does call for a co-operative development of abundance based management regimes for Alsek chinook, sockeye and coho stocks. Interim escapement goal ranges for Alsek sockeye and coho salmon were initially set by the TTC at 33,000 to 58,000 sockeye salmon, and 5,400 to 25,000 coho salmon. However, prior to 2000, stock assessment projects to determine system-wide escapements had not been developed except for some limited work on chinook salmon. Instead of managing to system-wide goals, which for the most part have been unverifiable, the TTC has established index goals for the Klukshu River stocks. Historically, the principal escapement-monitoring tool for chinook, sockeye and coho salmon stocks in the Alsek drainage has been the Klukshu River weir, operated by Fisheries and Oceans Canada and the Champagne-Aishihik First Nation. The Klukshu River is a tributary to the Tatshenshini River, which is a major salmon producing river system of the Alsek drainage.

Based on joint stock recruitment analyses conducted on Klukshu chinook and sockeye salmon, Canadian and U.S. managers agreed to a minimum escapement goal of 1,100 Klukshu chinook salmon and a escapement goal range of 7,500 to 15,000 for Klukshu sockeye salmon for the 2001 season. An escapement goal for Klukshu coho salmon has not yet been developed.

Weak returns of both sockeye and chinook salmon, and unusually persistent high water conditions, resulted in very poor catches of salmon in the Tatshenshini drainage in 2001. A total of 120 chinook salmon was harvested in the aboriginal fishery, which was the fourth lowest catch on record and was 57% below the 10-year average (1991-2000) of 282 fish. Due to weak returns of early and late-run sockeye salmon, the aboriginal basic needs levels were not achieved. The aboriginal fishery harvested an estimated 1,007 sockeye salmon, 29% below the 10-year average (1991-2000) of 1,411 fish. A total of 5 coho salmon was harvested in the aboriginal fishery.

The sport fishery harvested 87 chinook, the second lowest catch on record and 73% below the 10-year average. High water conditions contributed to very poor fishing conditions throughout the season. Due to conservation concerns, sockeye retention in the sport fishery was prohibited to August 15. The catch after this date included 9 sockeye retained and 3 sockeye live-released. A total of 112 coho salmon was kept and an additional 57 were released.

The Klukshu weir count of 1,825 chinook salmon was 35% below the previous 10-year (1991-2000) average of 2,807 fish. The spawning escapement of 1,738 chinook salmon above the weir achieved the minimum escapement goal of 1,100 Klukshu chinook salmon. The weir count and total escapement of Klukshu River sockeye salmon was 10,290 and 9,329 fish, respectively. The early-run count of 909 sockeye, was 73% below the previous 10-year (1991-2000) average of 3,344 fish, and the late-run count of 9,381 fish was 9% below the previous 10-year average of 10,212 sockeye salmon. The overall spawning escapement of 9,329 sockeye salmon in the Klukshu River was within the escapement goal range. Below average sockeye escapement was also recorded in the neighbouring tributary of Village Creek where an electronic counter recorded an estimated 2,487 sockeye, 40% below the historical average.

Similar to the chinook and sockeye counts, which were below average, the Klukshu weir count of 748 coho salmon was also below average; the previous 10-year average is 2,833 fish. The weir is usually removed prior to the completion of the coho return due to icing conditions and generally does not include fish that migrate after mid-October. In 2001, the weir was pulled on October 17th.

Several projects were implemented in 2001 to collect background data for use in developing abundance-based management regimes for chinook and sockeye. These included mark-recapture programs to estimate the escapement of chinook and sockeye in the Alsek drainage. DNA sampling was also conducted to add samples to the stock ID baseline for this system. A sockeye radio tagging study was conducted to determine run-timing and spawning distribution. Preliminary results of the sockeye mark-recapture program indicated total in-river run sizes of 36,017 fish. In the sockeye radio-tagging program, sockeye were found to be widely distributed throughout the Tatshenshini drainage as well as in the Alsek River upstream as far as Turnback Canyon. No fish were tracked above this point in the Alsek River.

Northern British Columbia Pink Salmon

Areas 3-1 to 3-4 Pink Net Catch

For the year 2001, Canada was to manage the 3-1 to 3-4 net fishery to achieve an annual catch share of 2.49 percent of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon.

An average return of pink salmon was anticipated for Canadian northern boundary area stocks as a result of good escapements in the brood year. A strong return was expected for the SE Alaska pink stocks adjacent to the northern boundary area. The Canadian pink catch in 2001 in Sub-areas 3-1 to 3-4 was 610,000 and a very preliminary estimate of the Alaska stock component of this catch is estimated to be 400,000. This harvest will be well below the target 2.49 % of the AAH.

The total Canadian pink catch of 610,000 in sub-areas 3-1 to 3-4 is lower than the 1985-2000 average catch of 1.46 million. The low harvest resulted from a combination of poor returns of Skeena area pink stocks, and coho management restraints on Canadian net fisheries in Sub areas 3-1 to 3-4 to reduce the harvest of Skeena coho and Nass sockeye. The percentage of the 2001 Area 3 net catch taken in sub-areas (1-4) was 33%, which was well below the 1985-2000 average of .58%.

Pink escapements in 2001 were at or above target in areas Area 3 but below target in the Skeena.

Area 1 Pink Troll Catch

For the year 2001, Canada was to manage the Area 1 troll fishery to achieve an annual catch share of 2.57 percent of the annual allowable harvest (AAH) of Alaskan Districts 101, 102 and 103 pink salmon.

The Canadian commercial troll fishery in Area 1 was open in the northern portion of the area from July 2 to August 31. The fishery harvested a total of 175,000 pink salmon, with a very preliminary estimate of 125,000 of Alaskan origin. This will be well below the annex agreement for 2.57 percent of the AAH of Alaskan Districts 101, 102 and 103 pink salmon.

Chinook Salmon

The following is a review of chinook fisheries and catch from October 1, 2000 through September 30, 2001.

AABM Fisheries

North Coast B.C. (NBC) troll and Queen Charlotte Islands (QCI) sport fisheries:

The abundance index for NBC troll and QCI Sport fisheries in 2001 was 1.02 (CTC letter, April 30, 2001), which provided a total allowable catch of 132,600 chinook in these fisheries. Preliminary estimates indicate a total catch of 40,600 chinook including 13,100 in commercial troll fisheries and 27,500 in sport fisheries.

The NBC troll fishery operated intermittently during the 2001 season due to conservation concerns for WCVI chinook. Troll fisheries were developed to provide information for the avoidance of WCVI chinook. Each fishery was extensively monitored and sampled for stock composition of catch, encounter rates by size categories, and maximum recovery of coded-wire tagged fish. The following openings were conducted:

- Area 1 and 2W were opened March 25 to May 16 to assess stock composition. Fishing was conducted under scientific license with 9 vessels participating and a total catch of 2200 chinook.
- The troll fishery was re-opened between September 8 and 30 in Areas 2E and 2W and 8000 chinook were caught. An average of 30 vessels and a maximum of 52 vessels participated in the 2W fishery but no effort was observed in Area 2E. A test fishery consisting of three troll vessels fished during the same period around Langara Island, Area 1. Total catch in the Area 1 test fishery was 600 chinook.
- A troll fishery was conducted in Area 4 from June 4 to June 15. A ceiling of 2000 chinook was placed on this fishery but catches were poor and only 1000 chinook were caught. Trolling was also permitted in portions of Area 4 during the commercial net fishing period from July 6 to 18 but, again, fishing was poor with only 1300 chinook caught.

Sport fishing in Area 1 and 2W was open for chinook fishing with a daily limit of 2 chinook, only one of which could be over 77cm, and a possession limit of 4 chinook. A minimum size limit of 45 cm was in effect all year. The restriction in catch of large chinook was instituted from June 4 to August 31 to reduce the potential impacts on age 4 and 5 WCVI chinook salmon.

West Coast Vancouver Island (WCVI) troll and "Outside" sport fisheries:

For 2001, the abundance index for this area was 0.66 (CTC letter April 30, 2001) which provided a total allowable catch of up to 141,200 chinook in these fisheries. The preliminary troll catch of 77,000 chinook (>55 cm.) and 36,000 (>45 cm.) sport catch results in a combined catch of 113,000 chinook.

WCVI chinook fisheries were limited in 2001 by conservation concerns for upper Fraser River (Thompson River) coho and WCVI origin chinook salmon. Directed chinook fisheries were conducted outside the period early June through mid September to avoid stocks of concern. Selective fishing practices were mandatory, including single barbless hooks and "revival tanks" for resuscitating coho salmon prior to release.

WCVI troll fishing opportunities were provided consistent with a Department commitment to evaluate winter fisheries to improve the economic base for the fleet and local communities while increasing flexibility in harvest opportunities and reducing the harvest rates on stocks exploited in this fishery. Troll fisheries were conducted during the following periods.

- October 3 and 13, 2000 (total catch 25,238 chinook);
- November/December 2000 (total catch 796 chinook);
- January/March 2001 (total catch 3,342 chinook);

- April/May2001 (total catch 29,527 chinook). Fisheries were not conducted during the period late March until late April to avoid impacts on earliest timing upper Fraser River spring run chinook.
- July 26 to August 6, 2001 in Areas 123 to 127 targeting on Fraser River sockeye. This fishery encountered 4,112 chinook, all of which were released.
- September 2001 (total catch 18,417 chinook). The fishery was restricted in to offshore areas in order to avoid WCVI chinook.

The minimum size limit of chinook during these periods was 55cm. Catches during these fisheries were extensively monitored to determine encounter rates of other species and chinook under 55cm, as well as sampling size distributions, and stock compositions (via CWT, DNA and otolith samples). Incidental catch of chinook was also permitted during a troll fishery in Barkley Sound directed at sockeye salmon (June 20 to 21, and July 4 to 5, 2001). The catch in this fishery, however, was very small with only 3 chinook reported kept, and 17 chinook released.

In the "outside" sport fishery, conservation concerns for the WCVI chinook stock resulted in restrictions in offshore areas and implementation of chinook conservation corridor. A "conservation corridor" extended 1 mile offshore from Bonilla Point (southern limit) to Tatchu Point in the northern part of the WCVI. In areas 121-124 the corridor prohibited salmon fishing. The corridor in Area 25 was open for the retention of two chinook, with a maximum size limit of 77cm. In addition, an area prohibiting salmon fishing was instituted within Nootka Sound in Area 25 in order to provide better protection to local wild stocks. This was a change from 2000 when the "corridor" in this area prohibited any salmon fishing but allowed selective coho fishing inside Nootka Sound. The change was anticipated to provide additional protection to local chinook stocks and provide additional opportunity to access age 3 chinook outside Nootka Sound.

The sport bag limit outside the "corridor" was modified to 2 chinook per day only one of which could be over 77cm. These actions were taken starting on July 15th north of Estevan Point (Areas 125-127) and on August 1st south of Estevan Point (Areas 121-124).

All sport and troll fisheries off the WCVI were required to use barbless hooks.

WCVI tidal sport catches were extensively monitored via creel surveys from June through September and reported catches at lodges. The estimated "outside" sport catch (Areas 121-126, June Areas 23-27, July Areas 23 & 24) was approximately 36,000 chinook. At this time, these estimates do not include all WCVI lodge catches.

ISBM Fisheries

Northern and Central BC Fisheries:

Fisheries included in this category are commercial net fisheries through out north and central BC, marine sport fisheries along the mainland coast, and Native fisheries in both marine and freshwater areas. Under the PST, obligations in these fisheries are for a general harvest rate limitations (estimated in aggregate across fisheries) and for stock-specific harvest reductions for stocks below escapement goals. These fisheries included:

- North Coast commercial gillnet catches totaled 22,035 chinook from Areas 3 to 6 (from fish slips). The majority (85%) of this catch occurred in Area 4. The Area 4 catch reflects large terminal runs of chinook salmon to the Skeena River and gillnet effort directed on chinook and sockeye salmon. The Skeena River test fishery index for chinook salmon was the largest since the inception of the test fishery in 1956.

- Central Coast commercial gillnet catches totaled 4,589 chinook. Virtually all of these chinook were caught in Area 8 (only 2 caught in Area 7).

- Trolling was permitted during net fishing times in Areas 6, 7 and 8. Participation was minimal and there were no reported landings of chinook.

- Tidal sport catches near the mainland coast of Northern BC exceeded all previous years. The tidal sport fishery in Areas 3 and 4 landed an estimated 11,000 chinook (monitored via creel survey, mid-May through mid-September). An increase in sport effort was likely in response to recent large returns to the area. . No estimate of sport catches from in-river fisheries was available for either the North Coast. However, fishing was reported as good in the Nass and Skeena systems and increased effort was evident.

- For the Central Coast areas 7, 8, and 9 sport logbooks provided a minimum catch estimate of 7736 chinook. This figure exceeds the estimated sport catch in 2000 without considering a catch estimate for the portion of the fishery not participating in the logbook program. Current estimates of the 2001 tidal sport fishery in the Central Coast are incomplete but indicate larger landings of chinook than 2000.

- Native chinook catches in the North and Central Coast were similar to recent years at 28,931 chinook. The estimated catch in the North Coast was 24,729 chinook, 6950 from tidal-area fisheries and 17,779 from non-tidal areas. The majority of these catches occurred in Areas 3 and 4 (Nass and Skeena rivers) which had strong returns of chinook salmon. The estimated catch in the Central Coast was 4,202 chinook, 281 from tidal area fisheries and 3,921 from non-tidal areas. The majority of these catches were from the Bella Coola River in Area 8, which had a good return of chinook salmon.

Total fishing mortality in Northern BC fisheries

Seines were not permitted to retain chinook in any of the North and Central Coast fisheries. Observers were used to estimate the total encounters of chinook by seine gear and a program was conducted to estimate the 24-hour mortality of chinook salmon released from seines in Areas 3 and 4.

Mortality estimates were measured from seine fisheries in July and August of 2001 in Areas 3 and 4. The mortality rates for chinook of similar size were not different between areas nor did they differ significantly over the duration of the study, thus results were pooled spatially and temporally within similar size classes. The following table presents preliminary results of 24-hour mortalities observed in the Area 3/4 study compared with total non-retention mortalities recommended by the Chinook Technical Committee (CTC) in the report TCCHINOOK 97-1.

Preliminary estimates of 24 hour Mortality Rates of Chinook salmon released from Seines in Areas 3 & 4 compared to total non-retention mortality recommended by the CTC.

Source	Small (<53 cm)	Medium (53 - 71 cm)	Large (>71 cm)
CTC 97-1	85.8%	73.5%	51%
Area 3/4 study	71.6%	48.3%	21%

An interesting observation in the Area 3/4 study was that the trend in mortality rate appeared to decrease with size and be lowest for chinook between 75 and 90 cm. Above 90 cm the mortality rate appeared to increase with size. Although the mortality analysis for larger fish suffers from a small sample size, the 24-hour mortality rate of chinook salmon over 100 cm was 44% (11 of 24 fish > 100 cm died).

Chinook encounter rates were observed in Areas 3 and 4 but analysis of this data is incomplete.

Chinook encounter rates were observed in North Coast troll fisheries but analysis of this data is also incomplete at this time.

Southern BC Fisheries:

Fisheries in this category include commercial net fisheries in Johnstone Strait, Juan de Fuca Strait, Strait of Georgia, and the Fraser River, the Strait of Georgia troll fishery, sport fisheries along the "inside" of the WCVI plus other marine sport fisheries and fisheries in local rivers, and Native fisheries in both marine and freshwater areas. In general, these fisheries were quite limited during 2001, and are briefly described below. Commercial net fishing occurred in Johnstone Strait and the Fraser River. In addition a limited selective seine fishery occurred in the Juan de Fuca Strait. Due to limited fishing opportunities and the requirements to release chinook taken in nets, the reported catch in these three areas was approximately 1,000 chinook retained and 6,400 chinook released by all gear types (gillnet, seine and troll).

Area G Troll conducted both test and commercial fisheries during the 2001 sockeye season. These fisheries were conducted in Areas 111, 11, 12 from July 26 to August 6, 2001, and encountered 746 chinook, all of which were released. The Area G pink salmon fishery in Area 12 from September 3 to September 8, 2001, encountered 72 chinook.

Strait of Georgia (Area H) troll fisheries were limited to incidental chinook retention during sockeye and pink fisheries. The total catch of chinook was 485 kept and 1117 released. These fisheries have been monitored to examine encounter rates and size distributions.

The sport fishery in tidal areas is currently the largest fishery on chinook in this region. The catch in these fisheries are now monitored by creel surveys in four areas: Juan de Fuca sport including Victoria and the Strait through Area 20-1, the Strait of Georgia, Johnstone Strait, and the mainstem lower Fraser River. Monitoring of these fisheries has not been consistent from year to year. In addition, the creel survey conducted in Johnstone Strait this year was far less comprehensive, only covering the northern portion of Area 12, than in 1998-2000. The catch and effort in both Georgia and Juan de Fuca

Straits increased considerably over 2000. Increase was most substantial in Juan de Fuca Strait where catch more than doubled and effort was up 44%. Sport catch regulations included an annual bag limit of 15, a daily bag limit of 2 and a size limit of 62 cm for Johnstone Strait and the Strait of Georgia north of Cadboro Point. For the Canadian portion of Juan de Fuca Strait, the daily bag limit of 2 chinook over 45cm and a seasonal limit of 20 were in effect.

The Lower Fraser sport fishery was monitored from June to early September. Due to problems/delays in data entry and analysis estimates for any of the Fraser fisheries are not yet available.

The "inside" WCVI sport fishery for chinook was closed as of August 1 in Areas 23 and 24, but parts of Areas 25 to 27 were open for retention of two chinook under 77cm from July 15 to September 30. The "no fishing" corridor in Area 25 was moved to inside areas of Nootka Sound and Esperanza Inlet, one exception being Tlupana Inlet with retention of one chinook over 77cm and one between 45cm and 77cm from July 15 to September 30. The estimated catch in the inside sport fishing areas was 6184 chinook (July Areas 25-27, August and September Areas 21-27). These estimates do not include all WCVI lodge catches at this time.

Recent fishing effort and catches for the major sport fisheries are reported in the following table.

Sport fishing effort (boat trips) and catch of chinook salmon in southern BC sport fisheries, other than the inside WCVI fisheries. Data for these fisheries based on creel surveys.

Year & Data	Survey	Area 20-1	Survey	Juan de Fuca St.	Survey	Strait of Georgia	Survey	Johnstone Strait
2001 Effort		5827		54127*		141899		10825**
2001 Catch	June-Sept.	5752	Jan.-Dec	16778*	April-Sept.	31237	July-Aug.	3759**
2000 Effort		4926		36883		127438		36165
2000 Catch	June-Aug	2659	Jan.-Dec.	6746	April-Sept.	22114	July-Sept.	11437
1999 Effort		6038		39484		124043		39151
1999 Catch	June-Aug	5770	April-Dec.	8984	April-Sept.	34909	July-Sept.	7813
1998 Effort		4564		43457		119452		19630
1998 Catch	June-Aug	3197	April-Oct.	6438	April-Sept.	14166	July-Sept.	2991

*Jan. – Oct. only

** minimum estimate due to incomplete coverage

As part of the creel survey conducted in Georgia and Johnstone Straits, encounter rate information was collected for legal (>62cm) and sub-legal chinook and for legal (>=30cm) and sub-legal coho size categories. Encounter rate information for Juan de Fuca Strait was collected for legal (>45cm) and sub-legal chinook and for legal (>=30cm) and sub-legal coho size categories. Post-release mortality information for the recreational fishery was determined from studies conducted in 2000-2001and detailed in the Canadian Stock Assessment Secretariat, Research Document 99/128 (CSAS, Doc 99/128). The mortality rates for legal size fish were: Seine, coho, 25%; Gillnet, coho, North 70% and

South 60%; Troll, coho, 26%; Sport, coho, 10%; and Sport, chinook, 15%. Post-release mortality for sub-legal (<33cm) was set at 32%. An estimate of total chinook mortality in the sport fishery is as follows:

Total 2001 catch plus encounters of chinook (released) and estimated post-release mortalities:

Area	Survey Dates	Catch	Effort	Legal Release	Mortality @ 15%	Sub-legal Release	Mortality @ 32%	Total Mortality
Area 20-1	June-Sept.	5752	5827	614	92	3023	967	6811
Juan de Fuca Strait	Jan.-Dec.*	16778	54127	3515	527	10099	3231	20536
Georgia Strait	April-Sept.	31237	141899	2748	412	43248	13839	45488
Johnstone Strait	July-Aug.	3759	10825	522	78	5810	1859	5696
"inside" WCVI	June-Sept.	6184	27137	6793	1019	3813	1220	8423

* data to end of October only

Coho non-retention of non-adipose clipped fish continued in these fisheries for 2001.

Total 2001 encounters of coho (released) and estimated post-release mortalities during coho total non-retention period:

Area	Survey Dates	Catch	Effort	Legal Release	Mortality @ 10%	Sub-legal Release	Mortality @ 32%	Total Mortality
Area 20-1	June-Sept.	0	5827	1819	182	8017	2565	2747
Juan de Fuca Strait	Jan.-Sept.	0	53136	47983	4798	6840	2188	6986
Georgia Strait	April-Sept.*	0	138920	16813	1681	12346	3951	5632
Johnstone Strait	July-Aug.	0	10825	27751	2775	8081	2586	5361

* data to August 1 for Areas 13-14, and to end of September for all other areas
** data to September only

There was a non-tidal coho sport fishing opportunity on the Somass/Stamp River (Area 23) from September 1 to December 31. This fishery was monitored for coho and chinook and encounter rate information from September 7 to October 31/2001. The survey consisted of exit point interviews and observations only. Swim crews and fishery officers drifting the river provided some angler effort information.

The major First Nations fishery in southern B.C. occurs in the Fraser River mainstem. The estimated catch to November 1, 2001 in this fishery was 26,324 chinook (fisheries are ongoing, but the increase will be minimal). This value is slightly higher than the 25,273 caught in 2000 and is, again, slightly higher than the recent 5-year (1996-2000) average catch of 24,491 chinook).

Overview of Chinook Stock Status

Since an assessment of the ISBM fisheries will be relative to the escapements achieved in the chinook indicator stocks, a brief overview of the 2001 returns is provided. The major points from northern B.C. to the south are:

Northern BC

Terminal runs were strong. The Yakoun River escapement was approximately 4,000 chinook, on par with year 2000. Preliminary estimates of Nass River escapements exceed 32,000 chinook, the largest run since 1986. Skeena River chinook escapements could exceed 70,000. Kitimat River escapements were better than in 2000 at approximately 25,000 chinook (hatchery staff estimate).

Central Coast

Terminal runs were near 2000 estimates. The Dean River received an escapement of 4000 chinook. Chinook escapement to the Bella Coola / Atnarko Rivers was 24,000, near the escapements in 1999 and 2000. The escapements for the Kilbella and Chuckwalla chinook were 1298 and 700, respectively. The dead pitch was still underway on November 15 in the Wannock River. A total of 300 chinook passed through the Docee River fence in 2001, down from 500 in 1999 and 2000.

Upper Georgia Strait / Johnstone Strait

Currently only 3 systems are monitored in Areas 12 and 13 with some level of consistency. The Nimpkish River is monitored using standardized swim surveys and stream walks by the hatchery staff. A fishwheel is used in the mainstem and a fence on Devereux Creek (small tributary) to track escapement on the Klinaklini system, and the Quinsam hatchery staff conduct a mark-recapture program to estimate escapement on the Quinsam/Campbell system. Other systems are covered using intermittent aerial surveys that are often conducted in sub-optimal conditions. Many of these un-enhanced stocks, particularly in the mainland inlets, have had consistently low returns for the past 10 years. Near five year average returns were recorded for Klinaklini and Nimpkish systems, while the Quinsam/Campbell has had increasing escapement for the past 5 years. [It should be noted that escapement estimates for the Klinaklini improved dramatically in 1997 when the intensive assessment program began].

Nimpkish: Near 5 year average return for both adult and jacks. Broodstock goal attained.
Klinaklini: Good return of adults and jacks. Slight decline from 2000 but near average 3 year return. Total enumeration of Devereux Creek spawners was accomplished this year using an underwater camera.

Quinsam/Campbell: Near record returns for both adults and jacks in both Campbell and Quinsam Rivers. Escapement trend increasing since 1995. Broodstock goal of 2200 adults attained.

Lower Georgia Strait

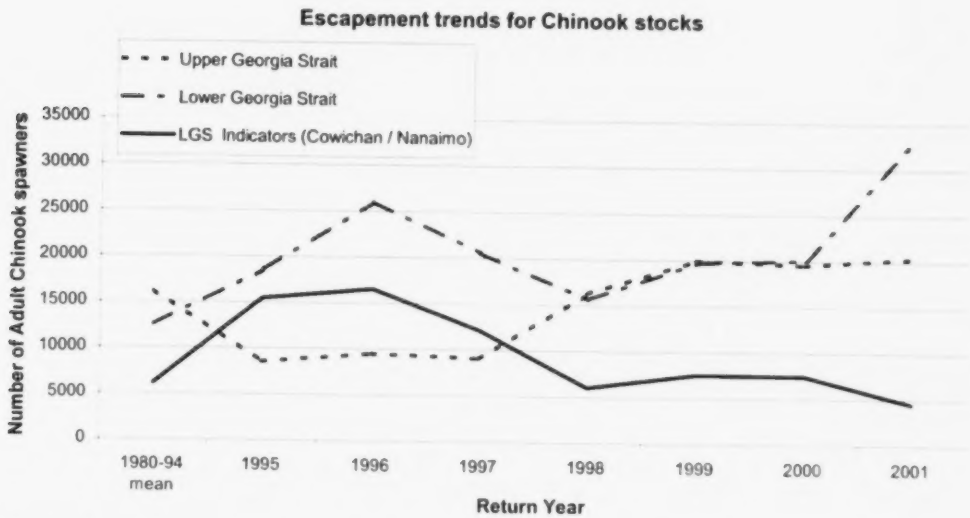
For Areas 14 to 19 the overall trend looks good (primarily on the strength of continued excellent returns for Puntledge and the Big and Little Qualicum systems), but the Lower Georgia Strait indicator stock group (Nanaimo and Cowichan) are continuing to decline. This is true particularly for the Cowichan, which has not met escapement goals in the past four years. This is a distinct downward trend for the Cowichan and likely was exacerbated by continued low water conditions this fall. However, the Cowichan hatchery was successful in acquiring their goal of 3.5 million chinook eggs.

Puntledge: Near record escapement and excellent return of jacks, which is a significant increase over escapement in 2000. Broodstock of 2200 adult chinook acquired for the summer stock and 1400 adults for the fall stock.

Nanaimo: Near 5 year average return for both fall and spring stocks, but with excellent returns of jacks. Increased escapement for Fall stock over 2000. Broodstock goal of 200 adults acquired by the hatchery.

Cowichan: Approx. 50% decline in escapement from 2000, and with a reduced return of jacks. Broodstock goal of 1600 adult chinook achieved.

Lang: Increasing trend in escapement since 1997, with 30% increase over 2000. Excellent return of jacks. Broodstock goal of 430 adult chinook attained.



Upper Fraser River

Early spring chinook returns looked good at Spius and Coldwater (>1000 spawners each); however, upper Chilcotin was poor. Near average returns for northern populations (Nicola approx. 9000 spawners); however, some northern populations were unestimable due to flooding and siltation.

Fraser River

Summer chinook returns continued to be strong. Yearling summer returns were reasonable, with some bright spots (Nechako >10,000; Chilko approx. 10,000). Under-yearling summer returns were very good with South Thompson >40,000, Lower Adams >7000, Little River >10,000 and Lower Shuswap >25,000.

Lower Fraser River

Fall chinook (Harrison River white chinook stock) returned in large numbers (preliminary mark-recapture value approx. 135,000 Age 3+ chinook) to the Harrison plus Chilliwack rivers; and strong Jack chinook returns were noted.

West Coast Vancouver Island

Female spawning levels are near expected levels. There was as apparent improvement in survival of Age 2-3 males, which are above expectations. The jack returns have increased over 2000 levels.

Fraser River Sockeye and Pink Salmon

Fraser River Sockeye Salmon

The sockeye run-size forecast for 2001 resulted in a preseason plan that incorporated both the 50% and 75% probability levels of abundance (12.9 million and 6.8 million respectively) with a 32% diversion estimate through Johnstone Strait. The U.S. share of the annual Fraser River sockeye salmon total allowable catch (TAC) to be harvested in the waters of Washington State was 18.4% with an adjustment of a 57,000 payback from an overage in U.S. catch in 2000.

Poor migration conditions experienced by the Early Summer brood in 1997 and well below average low snow-pack in 2001 led managers to develop a risk averse plan to address the anticipated poor return and potential risk of high en-route pre-spawn mortality. To ensure escapement targets, management adjustment models were reviewed to account for the possibility of extreme temperatures – similar to 1998 – which resulted in significant stress and mortality to migrating sockeye. Management concerns for Early Summer sockeye were addressed in the plan with the initiation of the following strategies:

- Closure to the retention of sockeye in all recreational fisheries that would intercept Fraser Sockeye (as of July 6th)
- 10-day moving window closure for First Nations' fisheries centred on the historic peak of the stock aggregate.
- 14-day moving window closure for commercial fisheries centred on the historic peak of the stock aggregate.

The Late Run sockeye in-river migration has historically delayed in the Gulf of Georgia. Over the past few years this behavior has altered to an immediate in-river entry. This unusual behavior has been associated with high levels of Late Run mortality, escalating to greater than 90% in 2000. To address the high probability of this occurrence the Fraser River Panel, with guidance from the Commissioners, adopted a risk averse management strategy which limited the exploitation of Late Run Sockeye to 17%. Based on the elevated

mortality rates experienced in recent years, it was the desire of the Fraser River Panel that this low level of exploitation would increase the proportion of Late Run fish escaping into the river, thus increasing the chance that some of these fish will spawn successfully. In adopting the 17%, it was understood that the swamping effect of returning Mid-Summer Run sockeye would make it difficult to determine an accurate harvest rate on the Late Run stocks. Therefore, to compensate for this limitation, a maximum harvest rate on the Mid-Summers was set to 60%, limiting the harvest to the peak of Mid-Summers.

The Canadian fishing plan also addressed conservation specific-concerns for:

- Thompson River coho
- Nimpkish River sockeye
- Harrison River chinook
- Thompson River steelhead

The current in-season estimated returns of Early Stuart (226,000) and Mid-Summer run (5,093,000) sockeye were significantly below the 75% probability forecast levels (258,000 and 6,159,000 respectively). The Early Summer (313,000) and Late Run (562,000) stocks appeared higher than the 50% probability forecasts (202,000 and 528,000 respectively). The Early Stuart and Early Summer runs were comprised of a higher than forecast component of 5 year old sockeye with weaker contributions from the age 4 sockeye. This confirmed how the extreme high water conditions in 1997 negatively affected the migration of these stocks. The larger than forecast contribution of age 5 sockeye provided the strength and earlier timing of the Early Summer run stock group. As the season progressed, the prevalence of age 5 sockeye was also encountered in the Mid-Summer stocks. Unfortunately, the age 5 sockeye could not compensate for the lack of age 4 sockeye that were forecasted to provide the bulk of the run. Late Run abundance was also higher than forecast with strong appearances of Weaver and Harrison (not in forecast) sockeye.

While the total return of sockeye was lower than forecast, limited opportunities were available in Canada for most users groups, including First Nations, commercial, selective and recreational fisheries. The management actions taken by the Fraser Panel for both the Early Summer and Late Run stocks resulted in achieving, and in some cases exceeding, gross escapement targets for all stock aggregates. As feared in the preseason planning, the Late Run stock aggregate (excluding Birkenhead) entered the Fraser River with little or no delay. Late Run closures on sockeye salmon fisheries in marine and the lower Fraser River were agreed upon by the Fraser Panel even though the catch was well below the 17% exploitation limit. Following recommendations from the Pacific Salmon Commission the Fraser Panel agreed that the protection of the later migrating fish was essential in conserving the Late Run stocks. Even with these precautionary measures, the upstream migration of these fish has significantly diminished the prospect of targeted numbers of Late-run sockeye will survive to spawn in October-November.

Preliminary estimates of Fraser River sockeye catch are as follows:

Total Fraser Sockeye	1,582,500
Test/charter fisheries	134,600
Canadian Catch	
Canadian commercial fisheries (include Area 20 seine fishery)	258,500
Canadian First Nation fisheries	830,700
Canadian selective fisheries	33,700
Canadian recreational fisheries	74,500
United States Catch	
U.S. Treaty Indian non-Indian fisheries	239,800
U.S. Treaty Indian ceremonial fisheries	10,700

Canada has the responsibility to provide information on sockeye spawning escapements. Preliminary estimates for the Early Stuart and Early Summer stock groups are 170,900 and 312,200, respectively. The in-season estimates of the Mid-Summer Run escapement are 4,727,000 spawners. At this level the actual spawning escapement will be nearly 1 million spawners greater than projected. In contrast to the projected escapement of 470,000 sockeye if there were no pre-spawning mortalities, the current estimate of the Late Run sockeye escapement is 105,000 spawners. This confirms the phenomenon observed with Late Run sockeye since 1996 continued into 2001.

Fraser River Pink Salmon

The forecasts for Fraser River pink salmon at the 75% and 50% probability levels (4,049,00 and 5,469,000 respectively) were well below the escapement goal of 6 million. Based on this, there was no anticipation of any directed Fraser pink salmon fisheries. Strong pink catches in the Test Fisheries resulted in a run size upgrade to 10 million. This provided a commercial TAC for both U.S. and Canada. It was agreed that any commercial fishery would be conducted with non-retention of sockeye and other species of concern. This ensured negligible impact on any of the remaining Late Run sockeye still in the approach areas.

Preliminary estimates of Fraser River pink catch are as follows:

Total Fraser Pink Catch	1,224,000
Test/charter fisheries	39,800
Canadian Catch	
Canadian commercial fisheries (include Area 20 seine fishery)	613,400
Canadian First Nation fisheries	133,000
Canadian selective fisheries	0
Canadian recreational fisheries	72,800
United States Catch	
U.S. Treaty Indian non-Indian fisheries	351,500
U.S. Treaty Indian ceremonial fisheries	800
U.S. recreational fisheries	12,700

While subject to further review, the current in-season estimate of the Fraser River pink salmon spawning escapement is 19,930,000 fish. This is in sharp contrast to the projected level of approximately 9 million pink salmon.

Southern B.C. Coho

Canada's management objective for coho in 2001 was to keep exploitation rates on Thompson River coho to levels experienced in the past three years (2% to 3% exploitation in Canadian fisheries). There were no commercial troll or net fisheries for coho in 2001. Special management zones were implemented in areas where stocks of concern were present. Restrictions in these areas included time and area fishing restrictions and selective gear restrictions. Management of the southern B.C. coho fisheries also considered the "inside" distribution of Strait of Georgia and Fraser River coho to the Strait of Georgia. Yellow zones were designated areas where stocks of concern were not present, such as selected terminal areas of the WCVI and Strait of Georgia near hatcheries, Central Coast areas, etc. There was a requirement to apply selective fishing techniques, which included gear restrictions such as barbless hooks for trollers, daily catch reporting, mandatory use of revival tanks in all commercial fisheries, mandatory logbooks and hailing catches on a regular basis, independent on-board observers on vessels when requested as part of the DFO monitoring program, and test fishing prior to openings to identify areas with high coho encounters. Coho encounters were recorded in all fisheries into legal (>=30cm) and sublegal (<30cm) size categories.

Area 20 Net Catch

There was a limited commercial seine fishery for sockeye in Area 20 from August 5-6, 2001. The total catch of sockeye was 45,924 and 11,051 pink salmon. The bycatch of coho was 466.

West Coast Vancouver Island Troll

(Areas 21 to 27, 121 to 127 and 130-1)
There were no commercial fisheries for coho along the WCVI (Area G) in 2001.

Recreational Selective Hatchery Mark Only Fisheries

Selective hatchery mark fisheries (SMF) were implemented for coho in Juan de Fuca Strait from October 1 to November 30; in the Campbell River area (Areas 13-14) from August 1 to Nov. 30; and in the Sechelt area (selected potions of Areas 16-1, 16-5, 29-1; Davis Bay, Porpoise Bay, Halfmoon Bay, Chapman Cr. terminal areas) from August 1 to November 30.

On West Coast Vancouver Island, selective mark only coho fisheries were implemented in offshore areas (Areas 123-127) and inshore waters of Area 26. Other areas had daily limits of 2 coho, of which only one could be wild (Areas 23-25, 27).

Total 2001 catch (mark only) and encounters of coho (marked and unmarked released) and estimated post-release mortalities during coho mark only fisheries:

Stat. Area	Survey*	Catch (hatchery marked)	Effort	Released Legal (unmarked)	Released Legal Mortality @10%	Released Sub-legal (combined)	Sub-legal Mortality @32%	Total Mortality ***
123 and 124	Aug. 1-Oct.31	6018	4595	2061	206	611	196	6420
125 to 127	Aug.1-Dec.31	39	200	0	0	234	75	114
23 to 25, 27 – 1 hatchery /1 wild	Jun 8-Dec. 31	29784	47335	15368	1537	0	0	31321
26 – SMF	Jun 8-Dec.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Juan de Fuca Strait	Oct. 1-Nov. 30*	244	991	573	57	66	21	322
Campbell R. / Comox (13 & 14)	Aug. 1-Nov. 30*	9145	35918	38095	3809	3502	1120	14074
Sechelt (16-1, 16-5, 29-1)	Aug. 1-Nov. 30*	633	1570**	168	17	0	0	650

* Data to end of October only.

** Effort measured in angler days since it is a shore fishery.

*** Total Mortality means Catch + Released Legal Mortality + Sub-legal Mortality.

Overview of Coho Stock Status

There have been large coho escapements on the west coast of Vancouver Island. In southwest Vancouver Island, peak counts to the end of October are about twice the average peak counts for the season from 1995 to 2000. In northwest Vancouver Island, this year's peaks to date are about 70% of the mean seasonal peaks. Escapements were also large in the last few years: compared to seasonal peaks in the more recent period of 1998 to 2000, this year's peak counts to date are about 25% greater in the southwest but less than half seasonal peak counts in the northwest. This pattern will not necessarily hold since we are only half way through the core spawning season on the west coast.

Escapement data are particularly incomplete in the Georgia Basin. Fence counts of wild coho in Salmon, Black, and Myrtle creeks and Nanaimo and Cowichan rivers are well ahead of last year's counts, despite low water conditions in the last two weeks. We think this is a particularly strong brood year on Vancouver Island, based on smolt counts in 2000. The target escapement is 3,100 at Black. This is a very strong brood year at Black, relative to the other two brood lines, with an escapement of 7,600 in 1998 and a record 155,000 smolts in 2000. With rain in the last few days, the count at this moment is about 6,000 and coho are entering strongly. The eventual count could exceed 9,000 based on estimates below the fence. It appears certain to be the largest run in the continuous fence count time series started in 1985 and will represent a significant increase in ocean survival. The count at Salmon is about 70% ahead of counts to the same date last year. Spawner counts in extensive stream surveys are also large relative to recent years at this date.

The coho escapement to the Interior Fraser, including Thompson, is estimated to be about 75,000. This preliminary estimate is about triple the escapements seen in recent years and will probably be the largest escapement since 1988.

Monitored smolt runs in 2001 in the Georgia Basin and in WCVI averaged about 80% and 70% of mean abundances in the previous three years. These fish return as adults in 2002.

This year's fry abundance data have not been analyzed yet but fry were at generally healthy levels throughout the south coast (adult return: 2003).

In this regime of low exploitations, the 2001 stock status appears to be good in southwest Vancouver Island and in at least part of the Georgia Basin and it is dramatically improved in the Interior Fraser. Status of northwest Vancouver Island coho is more uncertain. Smolt abundances were probably less this year, so equivalent ocean abundances next year will depend on an increase in survival. It is too early to estimate this year's survival.

Southern British Columbia Chum Salmon

Johnstone Strait Fisheries (Areas 12 and 13)

Pre-season forecast information suggests that the Study Area chum return will be approximately 2.3 million. In-season management is still in progress with the current run size estimated at 2.6 million (November 5). As outlined in the Pacific Salmon Treaty agreement, the harvest rate in Johnstone Strait is limited to 10% for run sizes less than 3.0 million. Test fishing commenced on September 18 and will close in early November. Johnstone Strait clockwork fisheries for seine, gillnet and troll were conducted between October 1 to 9. The catch results as follow:

Seine fishery conducted on October 1, 2001 (24hrs), estimated catch 155,000 chum

Gillnet fishery conducted on October 4th to 6th (48hrs), estimated catch 23,000 chum

Troll fishery conducted on October 8th to 10th (72hrs), estimated catch of 7,400 chum

The total commercial fishery catches (including 6,500 selective fishery catch) from Johnstone Strait is 192,000. In addition test fishery payment catches and First Nation harvests totaled 30,000 and 14,000 respectively. Based on the above catches and the current run size the harvest rate in Johnstone Strait is estimated at less than 10%.

Test fishing in Johnstone Straits continued until early November 2001.

Strait of Georgia (Areas 14 to 19)

Preseason expectations suggest surpluses for Mid-Vancouver Island areas and Saanich Inlet (Goldstream River). In-season management commenced in mid-October. Early fisheries in Mid-Vancouver Island area occurred with gillnet starting October 22-24, 29-31, November 5-11 and 18-23. Gillnet catches totaled approximately 42,000. Troll fisheries occurred on October 22-24, 29-31, November 5-11 and 18-19. Troll catches are estimated to total 1,700. Seine fisheries occurred November 12-14 and 18-19 with catches totaling only a few hundred. Commercial catches for all three gear types totaled approximately 44,000.

A one-day gillnet fishery occurred in Nanaimo area on November 5-6 for a catch of 1,200 chum.

Gillnet fisheries in Area 18 (Cowichan) occurred November 12-16 and 20-21, while a seine fishery occurred November 18-19. Catches were 13,000 and 6,000 for gillnet and seine respectively.

First Nation fishery catches are currently estimated at approximately 10,000, which do not include special surplus fisheries (ESSR - Excess Salmon to Spawning Requirements). ESSR fisheries have harvested approximately 135,000 in Saanich Inlet and 7,000 at Sliammon (near the city of Powell River). Note that catches in terminal areas will change as fisheries and management are currently in progress.

Genetic Stock Identification (GSI) Sample Collection

GSI samples were collected from the October 1 seine fishery which occurred in Johnstone Strait. A sample of 300 fish were collected and have been sent to Washington Department of Fisheries for analysis.

Fraser River

(as of Nov. 7, 2001)

Chum test fishing at Albion began on September 1 and chum catches in the 6.75" mesh chum test net to November 6 totaled 10,600 chum. As of November 6 the preliminary run size estimate predicted by the Bayesian model first used in 2000 was 2.1 million. This is above the pre-season forecast of 1.4 million. First Nation's fisheries to October 28 caught 36,000 chum of which approximately 20,000 were taken in selective fisheries initiatives. Catch estimates are based on hails and Aboriginal landing slips. Additional fisheries are still being scheduled.

Experimental fisheries designed to test methods of selectively harvesting chum while avoiding and releasing other species were undertaken in the Fraser River. The harvest of chum to October 25 was 13,400.

West Coast Vancouver Island Net (Areas 21 and 22)

Preseason expectations for this system was forecast at 210,000 chum. The overall gross escapement required into Nitinat Lake is 250,000. Chum salmon returning to Area 22 (Nitinat Lake) are caught in Area 21 and parts of Area 121. The escapement objective for Area 22 was 250,000 to a maximum of 350,000 chum. The additional 100,000 above the 250,000 target are utilized as hatchery brood stock requirements, increased distribution of spawners in the Nitinat River, and payment for in-lake test fishery/brood stock capture activities.

The fishing plan was again based on achieving weekly escapement goals into Nitinat Lake. In addition, the fishing plan addressed increased requirements to minimize by-catch of passing coho and steelhead, provide early opportunities for gillnets, provide a seine fishery to balance allocation, and then allow a combined seine and gillnet fishery at the peak of the run. Implementation of the plan was based on weekly assessment information from an in-lake test fishery/escapement surveys, a gillnet test fishery outside Nitinat Lake in the commercial fishing area, and a seine test fishery outside Nitinat Lake.

Test fishing commenced with gillnets outside Nitinat Lake on September 17th. Further information of testing outside (gillnet and seine), in-lake gillnet testing and escapements to Nitinat River, suggested a run size larger than expected. A commercial gillnet fishery commenced on October 15 for 2 days. The resulting catches were favourable and continued assessments resulted in confirmation of gross escapement goal being met. Further fishing

was initiated for gillnets (October 19 and 20) and seines for October 21. The fisheries continued for both seine and gillnet on October 22 and closed November 4. Total commercial catch is estimated at 54,000 and 72,000 for gillnet and seine, respectively.

Preliminary 1992 to 2001 Catches in Canadian Treaty Limit Fisheries

Fisheries/Stocks	Species	2001#	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
Stikine River	Sockeye	25,372	28,436	38,055	43,803	65,559	74,281	53,467	45,095	47,197	26,284	22,763
(all gears)	Coho	233	436	181	726	401	1,404	3,418	3,381	2,616	1,855	2,648
	Chinook-large	1,411	3083	2,916	2,164	4,483	2,741	1,646	1,790	1,803	1,840	1,511
	Chinook-jack	102	628	1,264	423	286	421	860	350	308	239	660
Taku River	Sockeye	47,431	28,149	21,181	19,038	24,246	41,665	32,640	28,762	33,217	29,472	25,067
(commercial gillnet)	Coho	2,502	4,395	4,888	5,090	2,903	5,028	13,629	14,531	3,033	4,077	3,415
	Chinook-large	1,520	1,576	957	1,107	2,732	3,331	1,577	2,065	1,619	1,445	1,177
	Chinook-jack	181	87	226	227	84	144	298	235	171	147	432
Areas 3 (1-4)*	Pink	610,000	*127,000*	2,162,280	61,000	329,000	987,000	2,613,000	262,000	1,242,000	1,099,000	6,961,000
(commercial net)												
Area 1	Pink	175,000	28,295	25,000	0	261,000	732,000	1,284,000	220,000	890,000	760,000	1,647,000
(commercial troll)												
North Coast**	Chinook	40,600	31,200	70,372	144,650	145,568	26,900	119,100	241,000	258,300	262,000	303,200
(troll + sport)												
West Coast Vancouver	Chinook sport	36,474	37,200	31,100								
Island	Chinook troll	54,770	*63,400*	6,500	10,284	51,400	0	81,000	146,000	275,000	345,500	202,900
Fraser River (Canadian	Sockeye	258,500	953,000	54,000	1,295,000	8,737,000	1,019,000	903,000	9,800,000	13,428,000	3,906,000	6,947,000
commercial catch)	Pink	613,400		3,000	0	3,660,000	0	3,777,000	0	3,731,000	0	6,405,000
Fraser River Stocks	Sockeye		494,000	41,000	707,000	1,578,000	257,000	415,000	2,100,000	2,876,000	700,000	1,881,000
(US commercial catch)	Pink			3,000	0	1,565,000	0	1,919,000	0	1,725,000	0	2,789,000
West Coast Vancouver	Coho	0	0	0	0	0	761,000	1,345,000	1,251,000	954,000	1,664,000	1,890,000
Island (commercial troll)												
Johnstone Strait	Chum	236,000	161,000	41,411	1,820,000	104,593	101,971	269,000	1,295,600	1,271,700	1,368,283	174,269
(clockwork catch)***												

\# 2001 catches are preliminary and are based on in-season hails, on-the-grounds counts, dockside tallies and Aboriginal landing slips, fish slip data, creek surveys and logbooks

* Area 5-11 catches included prior to 1995 and excluded from 1995 to 1998 inclusive. Not part of 1999 Annex IV provisions.

** North Coast catch excludes terminal exclusion catches of 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), 5,943 ('97), and 2,182 in 1998. No terminal exclusion in the 1999 Agreement –covered under the AABM arrangement, Central Coast areas not part of 1999 Annex IV provisions.

*** Canadian clockwork catch includes commercial, IFF and test fish catches in Areas 11-13 for 1991-94 inclusive, and in Areas 12-13 for 1995 to 2001 inclusive

Note: bold line between 1998 and 1999 indicates that 1999 catches are reported according to fisheries/stocks under the 1999 Annex IV provisions.

D. 2001 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN THE UNITED STATES AND CANADA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding operation of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. In 1988, a committee was formed to develop recommendations for the pre- and post-season and enhancement report formats. In summary, the committee proposed that:

- detailed reports on existing enhancement facilities of the type produced in 1987 be prepared every four years;
- the Parties will annually update information on eggs taken, fry or smolt released and adults back to the facility; significant changes in facility mission or production will be highlighted in narratives; and
- the Parties will provide periodic reports through the appropriate panels on new enhancement plans.

1. 2000 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2002.

2. 2001 ANNUAL REPORT ON THE SALMONID ENHANCEMENT ACTIVITIES OF THE UNITED STATES

This report had not been received by March 31, 2002.

3. 2001 UPDATE REPORT FOR THE SALMONID ENHANCEMENT PROGRAM IN BRITISH COLUMBIA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding: operation of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. This report summarizes the enhancement program since the previous report. Included is Appendix 1 containing the year-end status for hatcheries, manned spawning channels and restoration projects showing eggs taken and juveniles released during 2001 and fish presently rearing.

Significant Changes in Program

In 2001, a new area-based organizational structure for Fisheries and Oceans Canada was fully implemented. This structure integrates enhancement activities with programs from other sectors under local direction and delivery. Regional Headquarters will continue to

play a role in ensuring consistent program delivery between areas and in the development of standards and guidelines.

Area delivery

Area staff are responsible for the operation of hatcheries and manned spawning channels and most habitat restoration projects. Hatchery operations were previously managed by the Habitat & Enhancement Branch through the Enhancement Operations Division (DFO operated sites) and the Community Involvement Division (community and public operated sites) and by the Aboriginal Fisheries Strategy. Funding for restoration activities is derived, in part, from other programs such as B.C. Hydro, Watershed Restoration Plan (Forest Renewal B.C.), Habitat Conservation Fund and Pacific Salmon Foundation.

Activities at major hatcheries and manned spawning channels in 2001 are summarized below. Appendix 1 details the year-end status for all hatcheries, spawning channels and restoration projects showing eggs taken and juveniles released during 2001 and fish presently rearing.

South Coast

East Coast Vancouver Island

Big Qualicum: Chum escapement in 2001 was good. Targets for escapement and egg deposition targets in both channel and river were attained. The proportion of females was close to 40%. Production targets for both chinook and coho were easily attained. Terminal runs of both stocks set new records and coho jack numbers were over 30% of the total. More coho adults were released upstream in 2001 to contribute to a very successful expanded selective mark only sports fishery.

Cowichan: Unlike chinook further north in Georgia Strait, the Cowichan chinook return continued to be well below target in 2001. Delayed fall rains and the early release of lake storage resulted in low flow conditions that held up spawners. However, this also enabled the hatchery crew to collect sufficient brood for over 95% of the egg target. Jacks appeared to be significant in the river brood capture.

Little Qualicum: Escapement of chum to Little Qualicum was good with approximately 40% females – higher than in recent years. Egg deposition was triple that of 2000, but still only between ½ and 2/3 of target. Chinook returns were the highest in several years and targets were easily attained.

Chemainus: The contract for production of Chemainus chinook and coho was not renewed for 2001. Based on information from DFO Stock Assessment, the chinook return, like that for Cowichan, continued to be poor. No information was available for coho.

Nanaimo: Chum escapement was up from 2000, but still below recent 10-year averages. The proportion of females appeared to be low (under 20%). Nevertheless, the modest production target was attained. Escapement of summer and fall runs of chinook were near recent averages. Some pre-spawn mortality was observed for the fall run. Egg targets

were attained for both runs. Coho escapement continued to increase. Egg targets were reduced due to good recent natural adult recruitment and were attained easily.

Puntledge: The pink return to the Puntledge in 2001 was a record – exceeding even the strong brood year return of 1999. Returns were also good to the Tsolum River. All production targets were achieved with local brood. The chum escapement was moderate, increasing over the 2000 run by about 50%, and allowing egg targets to be reached. The summer chinook run was very good indeed, permitting the egg target for this stock of conservation concern to be reached for the first time. In addition, the captive brood program yielded approximately 350,000 eggs. DNA analysis of the original brood individuals was used to determine appropriate mating. The fall chinook run was also well above recent averages, allowing egg targets to be attained. The coho return was very good, well above recent averages and close to large levels of the early 1990's. Production targets were attained.

West Coast Vancouver Island

Conuma: Although harvest was up over last year, escapement of chum to streams in Tlupana inlet remained below recent averages and was poor in some. Returns also appeared to be later in timing by 1-2 weeks. In spite of a greater effort in brood capture, the hatchery was not able to achieve egg targets for the weaker systems (only 10% of targets for the weakest). Production targets for Conuma and Canton chum were met. Chinook escapement to Conuma increased over that in 2000, but (as expected) with a low proportion of females. The hatchery fell short of its egg target by approximately 15%. Coho escapements to Conuma were again very good and production targets were met.

Nitinat: Chum returns to the lake, river and hatchery were very good with the proportion of females approximately 40%. The chum egg target was easily attained. Chinook returns were well above the poor returns of last year although below expectations. Unlike other WCVI systems, the proportion of females was close to 50%. The egg target was attained. Coho escapement was a record, far exceeding past maximum estimates. Coho egg targets were attained.

Robertson Creek: Although still below long term averages, the chinook return to the Stamp River was much improved over the poor run in 2000 (significantly exceeding even forecast levels). However, the proportion of females was lower. Females in hatchery broodstock made up only approximately 10%. Nevertheless, approximately 85% of the chinook egg target was attained. Both thermal and coed-wire tag marking continue for Stamp chinook. Poor chinook returns to Nahmint River and a similarly low proportion of females resulted in only 30% of that target being met. Coho returns to the Stamp were again very good and the production target was easily attained. All brood 2000 coho were marked with an adipose clip to facilitate future selective mark fisheries. As a coho indicator stock, coded-wire tag + adipose clip and coded-wire tag only groups are also released. The hatchery continues to be responsible for applying fertilizer to Great Central Lake continuing the program initiated in the mid-1970's to improve sockeye productivity.

Central Coast

Northeast Vancouver Island

Hpmalco: Returns from Captive Brood Coho (Brood 98) were lower than expected. The large releases of coho from the Hatchery's Captive Brood program will not be continued in future. Coho egg targets were not achieved this year although the wild run was better than the past few years. Both summer and fall chum runs were stronger than previous years, but well below escapement targets. The hatchery achieved its egg targets for both summer and fall run chum in 2001. Poor incubation survival of 2000 brood coho and chum resulted in many less reared. A large part of the 1999 Brood coho, wild enhanced and Captive Brood, was destroyed just before release due to BKD infection. The balance were treated and released.

Quinsam: Chinook adult escapement was the best in 10 years, marking a significant trend of increased ocean survival. The Coho return was also good, and showed continued improvement over the past 5 years. Coho Jack returns were normal for the system. Pink escapement was the best in 10 years. Chum escapement to the Campbell River system was very good, and comes from a correspondingly good brood year. Habitat improvements in the Campbell were well utilized, and this may be a leading factor in the increased production of Chums in the system. The hatchery continues to be involved in several programs with the community and B.C. Hydro to improve water flow control and productivity of the Campbell River system. An estuary management plan has been developed with Campbell River municipality and several habitat improvement projects and land purchases within the estuary have been completed.

Central Coast Mainland

Snootli: There were strong returns of adult chum and pink salmon. The target escapement for chum was met, and the number of pinks being near double the target escapement goals. The number of returning chinook was near target escapement, while supporting a native food fishery, sport fishery and a small commercial fishery. The hatchery was involved in a pilot project to determine feasibility for Atnarko River chinook as a key stream candidate for Central Coast chinook stocks. After a successful field season, early indications are that Atnarko chinook is a suitable candidate for future chinook assessment projects. The coho escapement appears similar to the 1998 return, which was the strongest escapement in 20 years. The hatchery continues to support enhancement efforts for Rivers Inlet chinook stocks. The Rivers/Smiths sockeye recovery facility was filled to capacity with 900,000 eggs from the 2001 broodstock.

North Coast

Mainland

Kitimat: The chinook and chum adults returned in good numbers to the Kitimat River. Coho returned in record numbers to Kitimat River. Pink adult returns were very good to all systems. Chum returns were slightly lower than the escapement goals to Kildala River. Kitimat River steelhead program continues to be a success with a good mix of natural and hatchery produced fish.

Fulton and Pinkut: The spring programs for brood year 2000 resulted in total fry production from both sites in the spring of 2001 of 156M. This was significantly greater than the previous year, but a 6% reduction from the long term average. Prior to the brood year 2001 return, major gravel renovation works were completed at both Fulton and Pinkut. For the fall of 2001, sufficient adults returned to allow both projects to be loaded fully. Similar to the fall of 2000, no disease problems were experienced at Pinkut, but some pre-spawn mortalities were experienced at Fulton.

Queen Charlotte Islands

Pallant: The total chum returns to Pallant Creek and Mathers Creek were less than expected. The hatchery did not meet their chum egg targets nor cost recovery goals. The chum river escapement goals were achieved and a modest commercial fishery was carried out in Cumshewa Inlet for chum salmon. Coho returns were average. Remnant chinook from past transplant efforts (1986 - 88 broods) are still persisting. Very few pink salmon were observed in the escapement.

Lower Fraser River

Chehalis: The fall of 2001 coho returns appeared strong with intensive sport fishing activity on both the Chehalis and Harrison Rivers. All hatchery coho are adipose clipped and recreational fisheries are hatchery mark-selective. Chum releases in 2001 was 3.9 M fry released. Brood year 2001 chum returns were back to normal, with a total escapement to the river estimated at 140,000. The chum egg take was increased to six million. The return of Harrison white chinook appeared to be normal (80,000 range).

Chilliwack: The year started off with a great 2001 Winter Steelhead sport fishery. An angler questionnaire at season's end should indicate an increased take over the previous year. The escapements of coho to the Chilliwack River and hatchery were up significantly. Preliminary indications are that there was an increase in the number of wild coho in the annual deadpitch. Fall chinook returns have not changed dramatically, but continue to be significant, with more back into the hatchery rack than the previous year. Chum escapements to the river appeared to be higher than last year. Again there was an increase to the hatchery rack. The sport fishery for all species was excellent. Coho and steelhead fisheries continue to be hatchery mark-selective (adipose clip only).

Inch: All stocks showed a strong return in 2001. Chum escapement to Inch Creek was 25,000. The Stave River chum escapement was a record 625,000. The Stave coho escapement was a moderate 5,000 from a small smolt release. However the escapements to Inch Creek and Norrish Creek were records at 23,000 and 8,000 respectively. A large recreational fishery continued on the Nicomen and Stave systems. The Stave chinook target of 250K eggs was easily met from Stave returns. Conservation work on Maria Slough chinook continues. Mass marking of hatchery coho continues as well as significant marking of chinook and chum for stock assessment.

Upper Pitt: For the spring of 2001, 5.6 M sockeye fry were released from the facility. In addition, an estimated 3.8 M fry were produced from the hatchery operated spawning channel. The 2001 preliminary sockeye escapement estimate is 120,000. The coho escapement estimate is 30,000.

Weaver Creek: Even though the presence of the parasite *Parvicapsula minibicornis* amongst returning 2000 brood adults resulted in high pre-spawning losses, the egg to fry

survival rate was 76%, resulting in 6.6 million fry being produced in spring 2001. For brood 2001, another early migration/parasite year resulted in 9600 females (56% of target) being loaded into the channel. However, this is up considerably from the 2800 females loaded in the fall of 2000.

Strait of Georgia Mainland

Capilano: Projected smolt release numbers for chinook, coho and steelhead were achieved. Capilano adult chinook and coho returns provided excellent terminal tidal and non-tidal sports fishing opportunities. All coho are adipose clipped for hatchery mark-selective fisheries but none were coded-wire tagged. Chinook and coho adult returns to the hatchery itself were higher than average and egg targets were achieved. All of the 2001 brood chinook eggs were sent to Chilliwack for incubation and initial rearing due to the spring water problems during upgrading of the Cleveland Dam, upstream of Capilano Hatchery. Low adult steelhead returns to the Capilano River are of concern. Impacts on water quality, high total suspended solids (sediment), from the Cleveland Dam construction repairs started in October and will continue all winter. Impacts on rearing coho and steelhead juveniles are anticipated from this project and may cause poor survival to the adult stage.

Tenderfoot: The chinook return was the strongest seen and the 1.6 M egg target was met with little difficulty. Pink escapements were higher than any time over the last 20 years. Coho escapements appear to be better than at any time since the hatchery has been operational. Escapements to Tenderfoot Cr. are particularly strong. Additional coho and chum eggs were taken for fry releases for underseeded habitat restoration projects and PIP projects.

B.C. Interior

Thompson River

Shuswap: For the fourth consecutive year, the facility has been involved in enhancement of two local coho stocks of conservation concern. In an attempt to continue the rebuilding of the Upper Adams sockeye stock, 350K eggs were collected from the sub-dominant year return and transported to Shuswap for incubation and early rearing. In response to prespawning mortality concerns of late run Fraser sockeye, a pilot fish culture project was initiated on the Lower Adams sockeye stock.

Spius: For the Salmon River, the largest coho escapement past the fence (>220) since 1995 resulted in the collection of 65K eggs. For the three other coho stocks enhanced, strong returns resulted in egg collection targets being exceeded. For chinook, moderate-good escapements led to egg collection targets for the Nicola, Coldwater, Salmon and Spius all being achieved. For wild production, a large rain-on-snow event in early January, 2002 will likely result in vastly reduced survivals of all local coho and chinook stocks.

Upper Fraser

Horsefly: The channel is not operated for the dominant cycle year (2000 brood).

Nadina: The brood year 2000 egg to fry survival rate was 40%, resulting in the production of 12.9M fry. During the summer of 2000, gravel rehabilitation work first initiated in the mid nineties was completed. For brood year 2001, a moderate escapement

enabled the channel to be loaded to capacity with 35K adults. Unfortunately, the presence of the *Ich* parasite within the stock resulted in very high prespawning mortality.

***Seton**: The Lower Seton Channel is operating as usual for pinks (odd year cycle). The Upper Channel was complexed for all species as a BC Hydro compensation project and is no longer managed solely as a spawning channel.

Regional Headquarters

Oceans/Watershed Planning & Restoration

A new Watershed-based Fish Sustainability Planning (WFSP) framework was developed jointly by the federal and provincial governments in 2001 to coordinate the work of agencies, community groups, First Nations and other groups with an interest in the conservation of the fisheries resource and to provide a consistent collaborative planning approach for identifying priorities in fish sustainability (e.g., enhancement, habitat restoration and protection). Regional Headquarters will coordinate and assist the areas in the development of WFSPs by providing specialized support in habitat restoration, GIS, habitat inventory, database management, water and land use planning.

Stewardship & Community Involvement

A new Unit in Regional Headquarters has been formed to the lead the integration and strategic development of core stewardship and community involvement programs for habitat and enhancement activities in the Pacific Region. The Unit is responsible for co-ordination and monitoring activities to promote a consistent and strategic approach to the departmental vision for stewardship and community involvement.

The following are some of the key projects underway from 2001:

- Lead the development of the 3 year formal education strategy ("K- grade 12" target audience).
- Co-ordinate delivery of major projects, such as, revision of educational curriculum package, in cooperation with the Areas.
- Co-ordinate the administration and management of the Habitat Restoration and Salmon Enhancement Program (HRSEP) through the delivery of contribution agreements with community partners. The main objective of the federally funded HRSEP, established in 1996/97 is to rebuild salmonid population in the Pacific Region and Yukon Territory through habitat restoration, stock rebuilding and resource and watershed stewardship. During the last fiscal year, the program funded over 140 community based contracts.
- Lead a program review of HRSEP which sunsets March 31, 2002.
- Lead the evaluation of HCSP in terms of lessons learned, developing case studies and field level evaluation tools.
- Progress made on developing a network of community stewardship staff, partners and volunteers.
- Implemented the Pacific Salmon Endowment Fund and provide an ongoing linkage between the department and the Fund.
- Provide a link to National stewardship/volunteer initiatives and monitor International trends.

- Publish community stewardship reports, newsletters, brochures and awareness materials.
- Disseminate information to the Area staff.

Lake Enrichment Program

Three major Lake Enrichment projects were carried out in 2001. This technique adds a concentrated nutrient solution to the surface of lakes to stimulate the production of food organisms for sockeye salmon, increasing sockeye production by an estimated 50%. The first project was on Great Central Lake, which has been enriched annually for over 30 years to support the Barkley Sound sockeye fishery. The second project was on Adams Lake, which was the second time nutrient addition has been used to help rebuild the Upper Adams River sockeye stock, which was exterminated in 1908 due to log-driving practices. This stock has been recovering quickly using a combination of hatchery and lake enrichment technologies. The third project was on Woss Lake, in a cooperative study with the Nimpkish River Management Board to study the complete ecological impact of the enrichment technique. Woss Lake is also a stock rebuilding project.

The Lake Enrichment Program also co-sponsored a conference on lake and stream enrichment, held in Corvallis WA in 2001, and constructed a web page including information on over 60 B.C. lakes studied by the LEP over the years, plus other information on sockeye lake productivity and a bibliography on lake enrichment. The program helped fund a bathymetric survey of Quesnel Lake. Three of B.C.'s major sockeye nursery lakes were too deep for the current technology in the 1950's when all the other lakes were surveyed. The LEP has recently found that they are among the deepest lakes in the world -- Adams Lake (395 m), Chilko Lake (350 m) and Quesnel (540m).

Reports of the Joint Technical Committees

PART V
REPORTS OF THE JOINT TECHNICAL COMMITTEES

Executive summaries of reports submitted to the Commission by the joint technical committees during the period April 1, 2001 to March 31, 2002 are presented in this section. Copies of the complete reports are available from the library of the Pacific Salmon Commission.

A. JOINT CHINOOK TECHNICAL COMMITTEE

Joint Chinook Technical Committee Report. Annual Exploitation Rate Analysis and Model Calibration. CCHINOOK (01)-2. August 9, 2001.

This report contains the results of the Chinook Technical Committees (CTC) annual exploitation rate assessment, the Abundance Indices (AIs) for the Aggregate Abundance Based Management (AABM) fisheries from the final preseason chinook model calibration for 2001 (CLB 0107), Individual Stock Based Management (ISBM) Indices for each party, a summary of preseason forecast methods by stock and an assessment of escapement trends and goals as called for in Chapter 3, paragraph 9 of the Agreement.

AABM Abundance Indices

The AIs for the three AABM fisheries; Southeast Alaska (SEAK) All Gear, Northern British Columbia Troll and Queen Charlotte Islands (NBC) Sport, and West Coast Vancouver Island (WCVI) Troll and Outside Sport are presented in Table 1. Beginning with the 1999 fishing season, the Agreement specified that the AABM fisheries were to be managed through the use of the AIs. In 1999 and 2000 the CTC pre-season calibrations provided AIs that were used to set fishing plans but were not deemed to be final calibrations. Compliance with the Agreement specifies that the first post-season calibration be used. The AIs for 1999 and 2000 are final, while the AI for 2001 is used to set preliminary catches for the year.

Table 1. AI values for 1999, 2000, and 2001 for the SEAK, NBC, and WCVI Troll fisheries.

Fishery	1999	2000	2001
SEAK	1.12	1.10	1.14
NBC	0.97	0.95	1.02
WCVI	0.50	0.47	0.66

In general, the AIs remain low compared to AIs in the late 1980s and early 1990s but values in 2001 are larger than in recent years. The Agreement specifies an allowable catch for each AI for each fishery. The specified treaty catch by fishery and year and the actual (observed) catches are shown in Table 2.

Table 2. Observed and treaty catches for the AABM fisheries in 1999 and 2000 and the preseason forecast for 2001.

Fishery	1999 Observed	1999 Treaty	2000 Observed	2000 Treaty	2001 Forecast
SEAK All Gear	200,250	184,200	183,979	178,500	189,900
NBC Troll and QCI Sport	103,900	126,100	58,012	123,500	132,600
WCVI Troll and Outside Sport	31,085	107,000	100,030	92,300	141,182

In SEAK, the observed catch in 1999 and 2000 was greater than the treaty catch associated with the AI by 8.7% and 3.1%. In WCVI, the observed catch in 2000 was greater than the treaty catch associated with the AI by 8.4%, but the size limit in the troll fishery was reduced from 67 cm to 55 cm.

The Agreement specified that overage/underage provisions apply to both AABM and ISBM fisheries. The Agreement directed the CTC to adapt the previous overage/underage annex provisions to reflect changes based on a catch established through in season or pre-season abundance indicators. The CTC was also asked to review the 7.5% range above and below the management objective and consider whether increased flexibility in the management range is desirable or necessary taking into consideration management precision and increased risk on affected stock groups. The CTC has not yet discussed measures for implementation of overage/underage provisions.

ISBM Fisheries

For the ISBM fisheries, the Agreement specified that Canada and the United States would reduce base period exploitation rates on specified stocks by 0.365 and 0.400, respectively. This requirement does not apply to stocks that achieve their CTC agreed escapement goal. Canadian ISBM indices (Table 3) were all below the target ISBM index of 0.635. Thus, the general obligation was met for Canadian ISBM fisheries. For U.S. fisheries, several ISBM indices were above the target value of 0.600 (italicized in Table 4).

For 1999, eight CWT-based U.S. ISBM indices were above 0.600. Four of these were for stocks that had 1999 escapements above their CTC escapement goal. The remaining four were for the Upriver Bright and Washington Coastal Fall stocks (Queets, Hoh, and Quillayute). Although they lack CTC escapement goals, all exceeded their agency management goals in 1999. However, one interpretation of the Treaty is that they are not in compliance with the "general obligation" of the agreement until the CTC has reviewed and accepted biologically-based goals for these four stocks.

In 2000, seven U.S. ISBM indices were above 0.600. Two of these indices were for stocks that exceeded their CTC escapement goals in 2000. The other five were for the Hoh Fall, Quillayute Fall, Upriver Bright, Deschutes, and Nehalem stocks. Of these, only the Nehalem has a CTC agreed escapement goal. For the Nehalem, escapement was below the CTC escapement goal, but was above the 85% production level defined as the lower bound for escapement (footnote 3, page 40 of the agreement). As noted above, the other four stocks may not be in compliance with the general obligation. The Hoh,

Quillayute, and Upriver Bright fall stocks met their agency management goals, but the Deschutes stock did not.

For 2001, twelve U.S. ISBM indices are predicted to be above 0.600 (Table 4). One of these is for the Lewis River stock, which is predicted to be above the CTC agreed goal in 2001. Planned harvest patterns for the remaining 11 stocks may not be in compliance with the general obligation of the Agreement.

Table 3. ISBM Indices for Canadian fisheries, 1999 through 2001.

Stock Group	Stock	Canadian ISBM Indices			
		CWT Index	Modeled Indices		
		1999[1]	1999	2000	2001
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA[2]	0.237	0.254	0.613
West Coast Vancouver Island	WCVI (Artlish, Burman, Gold, Kauok, Tahsis, Tashish, Marble)	0.431	0.365	0.327	0.244
Fraser Early	Upper Fraser, Mid Fraser, Thompson	NA[2]	0.125	0.124	0.210
Fraser Late	Harrison River	0.112	0.309	0.198	0.336
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	0.021	0.174	0.118	0.314
Lower Strait of Georgia	Cowichan	0.517	0.304	0.232	0.325
	Nanaimo	0.163	0.209	0.113	0.246
North PS Nat Springs	Nooksack, Skagit	0.183	0.233	0.156	0.241
Puget Sound Natural Summer / Falls	Skagit	NA	0.197	0.119	0.217
	Stillaguamish	0.194	0.355	0.234	0.469
	Snohomish	NA	0.185	0.116	0.222
	Lake Washington	NA	0.332	0.202	0.355
	Green R	0.171	0.333	0.202	0.356
Washington Coastal Fall Naturals	Hoko, Grays Harbor, Queets, Hoh, Quillayute	NA	0.201	0.161	0.354
Col River Falls	Upriver Brights	NA	0.124	0.104	0.377
	Deschutes	NA	0.124	0.104	0.377
	Lewis	NA	0.056	0.180	0.180
Col R Summers	Mid-Col Summers	NA	0.109	0.085	0.144
Far North Migrating OR Coastal Falls	Nehalem, Siletz, Siuslaw	NA	0.094	0.110	0.505

[1] The 1999 CWT based estimates, not the 1999 model estimates, are used for evaluating compliance.
[2] NA means not available because of insufficient data (lack of tag codes, base period CWT, etc).

Table 4. ISBM indices for U.S. fisheries, 1999 through 2001 (indices above 0.60 are italicized for stocks without CTC agreed escapement goals and for stocks that did not achieve CTC agreed escapement goals).

Stock Group	Stock	US ISBM Indices			
		CWT Index	Modeled Indices		
		1999[1]	1999	2000	2001
North / Central B. C.	Yakoun, Nass, Skeena, Area 8	NA[2]	NC[3]	NC	NC
West Coast Vancouver Island	WCVI (Artlish, Burman, Gold, Kauok, Tahsis, Tashish, Marble)		0.26	0.38	*0.73*[4]
Fraser Early	Upper Fraser, Mid Fraser, Thompson		0.08	0.15	*0.70*[4]
Fraser Late	Harrison River	0.47	0.66	0.39	*0.62*
Upper Strait of Georgia	Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish	NA	NC	NC	NC
Lower Strait of Georgia	Cowichan	NA	0.17	0.21	0.48
	Nanaimo	NA	0.17	0.21	0.48
North PS Nat Springs	Nooksack	0.44	0.15	0.20	0.01
	Skagit	NA	ID[5]	ID	0.07
Puget Sound Natural Summer / Falls	Skagit	NA	0.17	0.21	*0.78*
	Stillaguamish	0.12	0.14	0.14	0.40
	Snohomish	NA	0.04	0.05	0.60
	Lake Washington	NA	0.50	0.48	0.59
	Green R	0.50	0.50	0.48	0.60
Washington Coastal Fall Naturals	Hoko	NA	0.39	0.34	0.56
	Grays Harbor	0.43	0.44	0.43	0.45
	Queets	*1.00*	0.88	0.42	0.44
	Hoh	*1.54*	1.39	*0.73*	*0.76*
	Quillayute	*1.30*	1.14	*0.72*	*0.75*
Col River Falls	Upriver Brights	*1.37*	1.02	*1.09*	*0.99*
	Deschutes	0.51	1.02	*0.88*	*0.74*
	Lewis	0.00	0.11	0.16	1.70[6]
Col R Summers	Mid-Col Summers	1.64[7]	0.11	0.09	0.14
Far North Migrating OR Coastal Falls	Nehalem	1.96[7]	2.67	*2.66*	*2.75*
	Siletz	0.82[7]	1.81	1.79[7]	*1.87*
	Siuslaw	1.22[7]	0.94	0.93[7]	*0.95*

[1] The 1999 CWT based estimates, not the 1999 model estimates, are used for evaluating compliance.
[2] NA means not available because of insufficient data (lack of tag codes, base period CWT, etc).
[3] NC means that the current model assumes the stock is not caught in US ISBM fisheries.
[4] Stock group not in Annex Table V.
[5] ID means insufficient data available to estimate stock specific impacts.
[6] Escapement predicted to be above CTC goal.
[7] Escapement was above CTC goal.

As with the AABM fisheries, the agreement specifies that overages are to be accounted for. The CTC has not yet discussed measures for implementation of overage/underage provisions. This is the first year that the nonceiling fishery index method has been

adapted to ISBM fishery indices and the first year that preseason ISBM projections have been made. Estimates based upon CWTs versus the CTC model can vary substantially. Projections of 2001 ISBM indices provide a caution to management agencies for preseason planning, but there is uncertainty associated with them. The number of stocks with U.S. ISBM indices above 0.60 that do not have CTC-accepted escapement goals emphasize the need for agencies to provide for CTC review the data and analyses to justify biologically-based escapement goals.

Stock Forecasts

A summary of recent forecasts for 14 stocks used in the CTC model calibration indicates that the accuracy of individual stock/year forecasts have ranged from 31% to 148% while the average accuracy has ranged from 63% to 126% during the period of 1997–2000. The variability of these forecasts is greater in the smaller stocks and for the WCVI stock. For the major production stocks, these forecasts suggest that their abundance in 2001 will be less than reported for 2000.

Escapement Trends and Goals

Paragraph 9 of the new Agreement defines criteria for identifying stocks of concern (only for stocks with CTC agreed escapement goals) and escapement levels in those stocks that would trigger additional management action (footnote 3, page 40 Agreement). Of the 15 stocks with CTC agreed escapement goals, the Blossom stock was the only stock to potentially qualify as a stock of concern (two years below escapement range). However, additional management action for this stock is not triggered in 2001 since both years exceed the lower bound of escapement as defined in footnote 3 of the Agreement.

The 1999 escapements for the Taku and Lewis chinook salmon stocks were less than the 85% production trigger values, but escapements in 2000 equaled or exceeded their goals. Thus, escapements during 1999 and 2000, for stocks with agreed escapement goals, do not trigger any additional management actions for 2001 as per paragraph 9, Chapter 3 of the Agreement.

Joint Chinook Technical Committee Report. Catch and Escapement of Chinook Salmon under Pacific Salmon Commission Jurisdiction, 2001. TCCHINOOK (02)-1. February, 2002.

The June 30, 1999, Pacific Salmon Treaty (PST) Annexes and Related Agreements (Agreement) substantially changed the objectives and structure of the Pacific Salmon Commission's (PSC) chinook salmon fisheries and assessment of chinook salmon stocks. The Agreement eliminated the previous ceiling and pass-through fisheries and replaced them with Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM) fisheries. It also tasked the Chinook Technical Committee (CTC) with a number of assignments (Appendix to Annex IV, Chapter 3).

In this report, we provide a summary of 2001 fishery catches by region and an assessment of escapement for those stocks that have CTC agreed goals. In addition, escapement data and agency comments have been provided for all escapement indicator stocks. We will

provide a second annual report, available in the spring or summer, that will summarize the exploitation rate analysis and results of the CTC model calibration postseason for the 2001 fisheries and preseason for the 2002 fisheries, as was done last year (see CTC 2001).

CHINOOK CATCH 2001

In 2001, the fisheries were managed according to the Agreement, and pre-season abundance estimates. Only catches and effort are presented at this time. However, assessment of compliance with the Agreement requires more detailed analyses with CWT data and calibration of the CTC model. These latter analyses will be reported during spring, 2002.

ESCAPEMENTS THROUGH 2001

The escapement review includes 51 naturally spawning escapement indicator stocks/stock aggregates. Biologically-based escapement goals have been accepted by the CTC for 16 of the 51 escapement indicator stocks/stock aggregates. For 11 of these stocks, the agency escapement goal is defined as a range; for the remaining 5 stocks, the escapement goal is the point estimate of S_{MSY} (escapement producing maximum sustained yield). In 2001, escapements were within the goal range for 6 stocks, above the range or S_{MSY} point estimate for 9 stocks, and below the goal range for 1 stock. It was not possible to provide this assessment for the other stocks without agreed escapement goals. However, data for other stocks are presented to illustrate trends in escapement but cannot be compared to an agreed escapement goal. Some stocks are managed to an agency goal, but these have not been reviewed by the CTC. The CTC will continue to review analyses to develop CTC agreed goals for the remaining stocks as they are provided.

B. JOINT CHUM TECHNICAL COMMITTEE

No reports were finalized for publication by this Committee during this reporting period.

C. JOINT COHO TECHNICAL COMMITTEE

No reports were finalized for publication by this Committee during this reporting period.

D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

Joint Northern Boundary Technical Committee: U.S./Canada Northern Boundary Area 2000 Salmon Fisheries Management Report and 2001 Preliminary Expectations. TCNB (02)-1. January, 2002.

This report reviews:

1) catch, effort, and management actions in the 2000 Northern Boundary Area troll and net fisheries of southern Southeast Alaska Districts 101 to 108 and northern British Columbia Areas 1, 3, 4, and 5;

2) management performance relative to Treaty requirements;

3) preliminary expectations and fishing plans for 2001.

Historical catch and effort data by district / Area, gear, species, and week are no longer reported annually in this report. They can be referenced in *Pacific Salmon Commission, Northern Boundary Technical Committee Report, U.S. / Canada Northern Boundary Area 1999 Salmon Fisheries Management Report and 2000 Preliminary Expectations*. Report TCNB (01)-1, January 2001. If these historical numbers are modified, they will be added as an appendix in a future annual report.

2000 Fisheries

In southern Southeast (SSE) Alaska, there was a below average return of pink salmon. The 12.4 million harvested was below the 10-year, 1989-1998, average of 32.9 million. The SSE Alaska escapement indices totalled 8.6 million, within the 6.0 - 9.0 million goal. The pink salmon harvest in all of Southeast Alaska was 20.3 million, below the preseason forecast of 31.0 to 51.0 million. The 4.4 million chum harvested in southern Southeast Alaska was above the recent 89-98 average of 3.6 million. In addition there were 605 thousand coho and 648 thousand sockeye salmon harvested in SSE Alaska in 2000. These were 52 and 41 percent of the 89-98 average, respectively.

In Canadian fisheries, a one-day Area 1 interception gillnet fishery occurred in Week 27, as well as a very small gillnet chum fishery in terminal areas in September. A short directed troll fishery took place in Area 1 to target Skeena-bound sockeye and pink stock.

A substantial return of Nass sockeye, along with a poor pink return, provided a modest net fishery in Area 3. Gillnet and seine sockeye catches of 220 thousand and 83 thousand, respectively, were above pre-season expected levels. The catch of pink salmon by gillnets (180 thousand) and seine (245 thousand) was very poor. The total Nass sockeye escapements were estimated to be 209 thousand (target: 200 thousand). Final sockeye escapement estimates through the Meziadin fishway totalled 136,994, below the target of 160 thousand. Pink escapements to Area 3 were below target levels for many stocks with a total escapement of 322,990. Chum escapements to Area 3 continued to be depressed in 2000 with an estimate of 20,718 spawners.

Area 4 fisheries were restricted to conserve wild Skeena sockeye and Upper Skeena coho stocks. The total catch was 2.0 million sockeye, 320 thousand pink, 27 thousand chum, and 18 thousand chinook salmon. The Skeena sockeye escapement estimate of 1,482,252 was well above the spawning target of 900 thousand. Although the enhanced portion of the run was strong, there continues to be concern regarding the health of some wild non-Babine stocks (Morice Lake, Kitwanga Lake). Spawning in Pinkut channels appeared normal while the Fulton facility was heavily infested with the parasite *Ichthyopthirius multifilis*, resulting in poor egg deposition. The Skeena pink escapement of 260 thousand is well below the minimum escapement target of 1.0 million, while coastal Area 4 stocks were also below target. The Skeena chum escapements were also very poor.

The Area 5 net fishery was severely restricted in 2000 to address concerns for coho. Total catch for the gillnet fleet was 18,000 sockeye, 9,000 pink and 2,300 chum. Total catch for the seine fleet was 11,599 sockeye, 23,468 pink and 3,205 chum.

The 2000 Area 1 pink troll fishery was restricted to conserve West Coast Vancouver Island chinook stocks and Upper Skeena coho stocks. A small selective pink fishery took place from 15-31 July in west Dixon Entrance (sub-areas 101-3 to 101-10) to assess the troll fleet's ability to segregate and reduce coho encounters on a targeted pink fishery. A second opening, directed at pink salmon, took place from 22-31 August with specific gear and area restrictions to reduce coho interception.

Joint Northern Boundary Technical Committee: U.S./Canada Northern Boundary Area 2001 Salmon Fisheries Management Report and 2002 Preliminary Expectations. TCNB (02)-2. January 2002.

This report reviews:

1) catch, effort, and management actions in the 2001 Northern Boundary Area troll and net fisheries of southern Southeast Alaska Districts 101 to 108 and northern British Columbia Areas 1, 3, 4, and 5;

2) management performance relative to Treaty requirements for pink salmon;

3) preliminary expectations and fishing plans for 2002.

Historical catch and effort data by district or area, gear, species, and week are no longer reported annually in this report. They can be referenced in *Pacific Salmon Commission, Northern Boundary Technical Committee Report, U.S. / Canada Northern Boundary Area 1999 Salmon Fisheries Management Report and 2000 Preliminary Expectations.* Report TCNB (01)-1, January 2001. If these historical numbers are modified, they will be added as an appendix in a future annual report.

2001 Fisheries

In southern Southeast (SSE) Alaska, there was an above average return of pink salmon. The 52.0 million harvested was well above the 1989-1998 average of 32.9 million. The SSE Alaska escapement indices totalled 11.8 million, above the 6.0 - 9.0 million goal. The pink salmon harvest in all of Southeast Alaska was 67.0 million, above the preseason forecast of 31.0 to 51.0 million. The 4.0 million chum harvested in southern Southeast Alaska was above the recent 89-98 average of 3.6 million. In addition, there were 1.2 million coho and 1.1 million sockeye salmon harvested in SSE Alaska in 2001. These were 102 and 71 percent of the 89-98 average, respectively.

In the North Coast of British Columbia, sockeye returns were average in the Nass and well above average for the Skeena sockeye aggregate (total commercial net catch 2.1 million). Nass sockeye escapements were 168,747, which was below the 200,000 target. Skeena escapement was variable with the strongest returns to Babine wild stocks, and notably poor returns to Morice and Kitwanga systems. Pink returns were strong in Area 3 and moderate in the Skeena (total net catch 3.25 million). Pink escapements were well above target in Area 3 and just above the minimum escapement target for the Skeena. Low chum

abundance resulted in low escapements and catches. A small Area 1 troll fishery harvested 175,000 pinks.

E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Joint Transboundary Technical Committee. Salmon Management and Enhancement Plans for the Stikine, Taku and Alsek Rivers, 2001. TCTR (01)-1. August, 2001.

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the Pacific Salmon Treaty, requires a co-operative approach by Canada and the United States. It is important that both Parties have a clear understanding of the objectives and agree upon procedures to be used in managing the fisheries, including the criteria upon which modifications of fishing patterns will be based. This document is intended to facilitate co-operative salmon management and research on transboundary stocks of the Stikine, Taku, and Alsek Rivers conducted by the Canadian Department of Fisheries and Oceans (DFO), the Tahltan First Nation (TFN), the Iskut First Nation (IFN), the Taku River Tlingit First Nation (TRTFN), Champagne/Aishihik and the Alaska Department of Fish and Game (ADF&G).

The report contains, by river system and species, the 2001 salmon forecasts, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the conduct of the 2001 fisheries. With the exception of Stikine sockeye salmon, for which a numerical forecast is required by the Pacific Salmon Treaty and by the Stikine Management Model and Taku River sockeye salmon, forecasts are given qualitatively, with reference to brood year escapement data where available. The report also contains joint plans for fry plants and egg collections in 2001 and proposed transboundary field projects for the year, identifying agency responsibility and contacts for the various functions within the projects.

Joint Transboundary Technical Committee. Transboundary River Sockeye Salmon Enhancement Activities Final Report for Summer, 1995 to Fall, 1999. TCTR (01)-2. November, 2001.

A joint Canada/U.S. transboundary sockeye enhancement program was initiated in 1989 with the first egg take at Tahltan Lake and has continued annually to the present. The intent of the program is to increase sockeye salmon production from the Stikine and Taku Rivers pursuant to specific terms within the Pacific Salmon Treaty. This report presents the methods and results of the transboundary sockeye enhancement program from summer 1995 to fall 1999. Enhancement activities that occurred prior to summer 1995 have been previously reported (PSC 1991; PSC 1994; PSC 1998). A brief summary of activities and results are presented below.

Hatchery Operations

All sockeye eggs collected for the enhancement program were incubated at the Snettisham Hatchery Incubation Facility in Southeast Alaska. In 1995 a cooperative agreement between Alaska Department of Fish and Game (ADF&G) and Douglas Island Pink and Chum (DIPAC), a private aquaculture organization in Juneau, provided for the continued operation of Snettisham Hatchery. This arrangement included the provision of egg incubation, otolith marking, and fry transport for the transboundary enhancement projects.

Otolith Marking and analysis

All developing sockeye fry originating from the transboundary enhancement program are marked with a distinct thermal otolith mark applied at Snettisham Hatchery. Laboratories in Juneau, Alaska and Whitehorse, Yukon examine otoliths collected by ADF&G and Fisheries and Oceans Canada (FOC) as part of the enhancement program evaluation and management. The Juneau Laboratory analyzes adult sockeye otoliths collected from U.S. and Canadian commercial and test fisheries and provides timely in season estimates of the enhanced proportion of the commercial catch for Canadian and U.S. fisheries managers. Juvenile and adult otoliths collected as a result of ongoing enhancement evaluation programs are processed at the Whitehorse Otolith Lab.

Tahltan Lake Outplant Project

Egg takes and fry outplants have occurred annually at Tahltan Lake. Egg take targets were not reached in 1997, 1998, and 1999 due to low escapements. Growth of enhanced fry has been consistently similar to that of wild fry. Enhanced fry to smolt survival has been variable, although average enhanced egg to smolt survival has been approximately triple that of wild egg to smolt survival. Limnological observations suggest the juvenile sockeye carrying capacity has not been reached at past and current stocking densities. Enhanced Tahltan Lake sockeye have accounted for approximately 40% of the total Stikine River enhanced sockeye harvest from 1993 through 1999. The overall enhanced contribution to the total Stikine River sockeye harvest over this period has averaged approximately 30%.

Tuya Lake Outplant Project

Tahltan Lake broodstock have continued to be the source of fry outplants to Tuya Lake. Growth and survival of outplanted fry has been exceptional. Limnological data indicate that minor changes to the zooplankton community have occurred as a result of the fry outplants, however the forage base biomass and carrying capacity appears to be stable and the system is likely capable of supporting higher fry densities. Ongoing evaluation surveys suggest that a non-anadromous sockeye (kokanee) population originating from progeny of outplanted fry has become established in Tuya Lake. This may have implications with respect to increased intra-specific competition and future fry stocking densities. Adult returns of Tuya Lake outplanted fry have accounted for approximately 60% of the total Stikine River enhanced sockeye catch during the years 1993 to 1999.

Tatsamenie Lake Outplant Project

Egg take goals at Tatsamenie Lake have been attained for all years except 1999 when low escapements precluded reaching the target. Growth of outplanted fry has been good and limnological observations indicate the system is readily capable of supporting prevailing population levels of enhanced and wild fry. However, enhanced fry to smolt survival continues to be much lower than expected despite varied and ongoing attempts to increase it. The continuation of the Tatsamenie Lake outplant project is in doubt if efforts to increase survival are not effective. The enhanced contribution to the total Taku River commercial sockeye catch has only averaged approximately 2% from 1994 to 1999 and is reflective of the poor enhanced production from both Tatsamenie and Trapper lakes.

Trapper Lake Outplant Project

The Trapper Lake outplant project was suspended in 1995 due to low survival of the outplanted fry and the small number of emigrating smolts captured. Adult returns have confirmed the low enhanced production from Trapper Lake and it is improbable the project will be re-instated unless correctable causes for the poor fry survival are identified.

F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

No reports were finalized for publication by this Committee during this reporting period.

G. JOINT SELECTIVE FISHERY EVALUATION COMMITTEE

Joint Selective Fishery Evaluation Committee. Investigations of Methods to Estimate Mortalities of Unmarked Salmon in Mark-Selective Fisheries through the use of Double Index Tag Groups. SFEC (02)-1. February. 2002.

Currently, the coded-wire-tag (CWT) system is the only tool available to estimate and monitor coastwide impacts on individual stocks of natural fish. For example, the ability to use CWT data to estimate age and fishery specific exploitation rates is critical to implementing the June 1999 Pacific Salmon Treaty (PST) agreement. The agreement requires the evaluation of impacts on individual stocks on a fishery and age-specific basis for Individual Stock Based Management (ISBM) fisheries. Constraints on ISBM fisheries are defined by indices that reflect exploitation rates in specific combinations of fisheries. Also, the PST agreement requires Aggregate Abundance Based Management (AABM) regimes to be evaluated annually, pursuant to calibration of the PSC Chinook Technical Committee (CTC) Chinook Model. These regimes are based on relationships between abundance indices and target fishery harvest rates for individual or specific combinations of fisheries (1999 PST annex). CWT analyses are also used in other forums (e.g., domestic management and compliance with the Endangered Species Act (ESA)).

The Pacific Salmon Commission's (PSC) technical committees and management agencies have designated certain coded-wire tagged hatchery groups to be CWT indicator stocks for naturally produced stocks. For this association to be valid, the exploitation rates on a natural stock and its hatchery indicator must be the same. Mark-selective fisheries attempt to concentrate fishing pressure on hatchery stocks. Therefore, the exploitation rates on hatchery and natural fish can no longer be expected to be the same, requiring a fundamental change to the indicator stock program.

To maintain the viability of the CWT program for coho salmon, the Ad-Hoc Selective Fishery Evaluation Committee (ASFEC) devised a double index tagging (DIT) system (ASFEC report to the Pacific Salmon Commission, 1995). The DIT system uses both marked and unmarked tagged indicator tag groups to represent hatchery and natural stocks respectively. The ASFEC report also describes methods for estimating total selective fishery impacts for coho salmon by linking these DIT groups. However, these methods are of limited applicability to chinook salmon because of confounding that arises from over-winter mortality and incidental selective fishing mortality. Furthermore, these methods cannot estimate fishery-specific exploitation rates for coho or chinook salmon.

This report describes and evaluates methods for unmarked mortalities in selective fisheries for chinook and coho salmon. The general conclusions of the SFEC are detailed below followed by brief descriptions of the methods.

General Conclusions

1. *Each selective fishery proposal must be evaluated individually.* The ability to measure the impact of a selective fishery will depend on the specific circumstances surrounding each fishery and the particular fishery management objectives. The SFEC-AWG has not been able to develop methods that can provide unbiased age-fishery specific estimates of unmarked mortalities for every fishery scenario. The ability of the methods to provide precise, unbiased estimates depends on several factors. These factors include the species involved, the location, number, and magnitude of the selective fishery(ies), stock-specific migration patterns, the number of CWTs released and the number of tagged fish surviving to enter the fishery, as well as the adequacy of catch and escapement sampling programs.

2. *Implementation of selective fisheries will require significant modifications to the CWT program to compensate for the loss of information.* Double Index Tagging (DIT) will be necessary with matched pairs of marked and unmarked fish. This will require at least twice the number of CWT releases as is currently used in indicator tag groups to maintain precision levels. To detect CWTs in both unmarked and marked fish, effective electronic tag detection (ETD) will be required wherever a DIT group is encountered.

3. *Regardless of the method used to estimate mortalities of unmarked DIT groups in selective fisheries, there will be a general loss of information.* Direct samples of unmarked mortalities in selective fisheries will not be available. Assumptions about the relationship between the marked and unmarked DIT pair will be required to estimate these incidental mortalities. Estimates of unmarked mortalities will be biased when these additional assumptions are not met. Since many of the assumptions will be difficult to test, the uncertainty surrounding unmarked mortalities will be increased when selective fisheries are implemented.

4. *It is possible to compensate to some degree for the loss of information by increasing tagging levels or sampling rates.* The loss of information is reflected by increased uncertainty in the estimates of unmarked mortalities. This uncertainty is a function of both precision and bias. While increased tagging and sampling levels can compensate for a decrease in precision, these measures will not compensate for bias introduced due to assumption violations. In addition, it may not be possible to determine the direction or magnitude of these biases.

5. *The importance of uncertainty due to selective fisheries depends on the proportion of total fishing mortality accounted for by these fisheries.* If, for instance, concern is focused on brood exploitation rates, and if the selective fishery represents a small proportion of total mortalities, the impact of imprecision in an individual estimate of unmarked mortalities in a selective fishery may be minimal. On the other hand, if the management concern is

focused on the exploitation rate of an individual selective fishery, then the impact of the increased uncertainty may be significant. The significance in this case will depend on how close the predicted exploitation rates are to the management objective.

6. *If management needs are directed at constraining fishery impacts to an acceptable level, increased uncertainty in estimating the fishery impacts will have to be acknowledged.* A buffer between a maximum limit on the allowable exploitation rate and the target exploitation rate can serve to set confidence that the actual exploitation rate was below that maximum limit. As uncertainty in estimated exploitation rate increases, the buffer must be enlarged to maintain the same level of confidence. For instance, the 1999 PST Agreement obligates the Parties to reduce impacts of ISBM fisheries on chinook by specified amounts compared to a 1979-1982 base period and contains provisions to adjust future fisheries to compensate for overages. With increased uncertainty, there would be a greater chance that the estimated value of an ISBM index would exceed the level permitted and trigger a requirement to adjust future fisheries. To provide the same chance of obtaining a post-season estimate of an ISBM index that complies with the obligations under the 1999 PST Agreement, reductions in target exploitation rates for ISBM fisheries may be required to compensate for increased uncertainty in estimation methods.

This report discusses four methods to estimate unmarked mortalities in selective fisheries. Two of these methods, the equal marine survival (EMS) and equal exploitation rate (EER), were first discussed in the ASFEC 1995 report. They provide estimates of total selective fishery mortalities but do not provide fishery specific estimates. A third, the terminal method (TERM), can be applied to a single fishery in a terminal area if there have been no preterminal selective fisheries. The fourth, the paired ratio (PR) method, can be used in preterminal and terminal areas. Each of the four methods depends on assumptions about the relationship of the marked and unmarked components of the DIT group.

Total Methods (EMS and EER)

The total methods estimate the sum of unmarked mortalities from all selective fisheries combined and will provide fishery-specific estimates if there is only one selective fishery. The EER method requires at least one non-selective fishery occurring before the first selective fishery. For chinook salmon, the total methods can only be used in terminal areas and cannot be used if any preterminal selective fisheries affect the DIT group.

Terminal Method (TERM)

The TERM method applies to a single selective fishery occurring in a terminal area if there are no preterminal selective fisheries. A terminal area is where any fish vulnerable to and escaping from the fishery will spawn that year. For all situations, the TERM method requires an external estimate of the selective fishery mortality rate *sfm* on released unmarked fish. Bias in the supplied *sfm* is proportional to bias in the estimate of unmarked mortalities. The estimates will also be biased if there are multiple encounters (where released fish encounter the gear again) in the terminal fishery.

Paired Ratio Method (PR)

The PR method pairs a selective fishery with a non-selective fishery. An estimate of the unmarked to marked ratio for a DIT pair is estimated from the non-selective fishery pair and is applied to the selective fishery. The method also requires an external estimate of fishery-specific *sfm*. The non-selective fishery must occur immediately prior to or concurrent with the selective fishery in time and area.

The PR method is the only method discussed that is capable of providing fishery specific estimates of unmarked mortalities in selective fisheries regardless of their location (terminal or preterminal). Application of this method to a fishery is independent on the existence of prior selective fisheries.

The precision around estimates of unmarked mortalities in the selective fishery is dependent on the precision of estimates of mortalities in the paired non-selective fishery. Estimates of unmarked mortalities in the selective fishery will be biased if either the *sfm* or the non-selective fishery estimate of λ is biased. If the non-selective fishery is not concurrent with the selective fishery, the estimates may be biased if there are multiple encounters in the selective fishery.

Precision and Accuracy of Unmarked Mortality Estimates

Uncertainty of unmarked mortality estimates is defined in terms of precision and accuracy. Precision, or the variability of the estimate arising from sampling processes, is determined by the number of fish tagged, the sampling rates in the fisheries, the size of the fishery (number of mortalities), and the estimation method used. The precision of the estimates is evaluated in terms of the sampling variance of the estimates and is related to the tagging and sampling rates. Accuracy is defined in terms of bias and is compromised when assumptions underlying the estimation methods are violated.

The method used, the size of the fisheries, marine survival rates, unaccounted for mark-induced mortality, sampling rates, and bias in assumed *sfm* impact the precision and accuracy of the different methods. The four estimation methods rely on different sets of assumptions. In general, estimation methods that rely on more assumptions produce more precise estimates, but are more prone to potential biases. While the precision of unmarked mortality estimates can be estimated, bias will be difficult to monitor or evaluate from sample data.

Joint Selective Fishery Evaluation Committee. Mass Marking and Mark-Selective Fishery Program Actual Releases and Mark-Selective Fisheries for 1999 and Planned Activities for 2000. SFEC (02)-2. February, 2002.

This report provides information regarding mass marking, sampling and mark-selective fisheries from the Regional Coordination Sub-Committee of the Selective Fishery Evaluation Committee. The information provided includes actual releases and fisheries for 1999 and planned activities for 2000.

Publications of the Pacific Salmon Commission

PART VI
PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 600 - 1155 Robson Street, Vancouver, B.C., V6E 1B5. Photocopying charges may be levied for documents which are out of print.

Reports published by the Pacific Salmon Commission after March 31, 2000 including Commission annual reports, annual reports of the Fraser River Panel, Joint Technical Committee reports and technical reports of the Pacific Salmon Commission are also available in full text format on the Commission's website at www.psc.org.

Documents listed here are those which were published during the period from 2001/02 inclusive. For previous publications, please refer to the Pacific Salmon Commission 1994/1995 Tenth Annual Report and 1999/2000 Fifteenth Annual Report, or contact the Pacific Salmon Commission Library.

A. ANNUAL REPORTS

16. Pacific Salmon Commission 2000/2001 Sixteenth Annual Report. January, 2002.

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

37. TCCHINOOK (01)-2 - *Annual Exploitation Rate Analysis and Model Calibration*. August 9, 2001.

38. TCCHINOOK (02)-1 - *Catch and Escapement of Chinook Salmon under Pacific Salmon Commission Jurisdiction, 2001*. February 2002.

ii. Joint Chum Technical Committee

No reports were finalized for publication during this reporting period.

iii. Joint Coho Technical Committee

No reports were finalized for publication during this reporting period.

iv. Joint Data Sharing Technical Committee

No reports were finalized for publication during this reporting period.

v. Joint Northern Boundary Technical Committee

22. TCNB (02)-1 - U.S./Canada Northern Boundary Area 2000 Salmon Fisheries Management Report and 2001 Preliminary Expectations. January, 2002.

23. TCNB (02)-2 - *U.S./Canada Northern Boundary Area 2001 Salmon Fisheries Management Report and 2002 Preliminary Expectations.* January, 2002.

vi. Joint Transboundary Technical Committee

34. TCTR (01)-1 - *Salmon Management and Enhancement Plans for the Stikine, Taku and Alsek Rivers, 2001.* August, 2001.

35. TCTR (01)-2 - *Transboundary River Sockeye Salmon Enhancement Activities Final Report for Summer, 1995 to Fall, 1999.* November, 2001.

vii. Selective Fishery Evaluation Committee

2. SFEC (02)-1 - *Investigations of Methods to Estimate Mortalities of Unmarked Salmon in Mark-Selective Fisheries through the use of Double Index Tag Groups.* February, 2002.

3. SFEC (02)-2 - *Mass Marking and Mark-Selective Fishery Program Actual Releases and Mark-Selective Fisheries for 1999 and Planned Activities for 2000.* February, 2002.

C. REPORTS OF THE FRASER RIVER PANEL

12. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1998 Fraser River Sockeye Salmon Fishing Season.* PSC Staff. August, 2000.

13. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1999 Fraser River Sockeye and Pink Salmon Fishing Season.* PSC Staff. August, 2000.

D. TECHNICAL REPORT SERIES OF THE PACIFIC SALMON COMMISSION

No reports were finalized for publication during this reporting period.

E. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

31. Cronkite, G.M.W., Y. Xie, and A.P. Gray. 2000. *Active tracking sonar study of salmon migration behaviour at Mission, British Columbia*, 1998. Can. Man. Rep. Fish. Aquat. Sci. 2506. 47 p.

F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON COMMISSION

Responsibility for maintenance of the library of the International Pacific Salmon Fisheries Commission, on its termination December 31, 1985, was transferred to the Pacific Salmon Commission. Documents in the Library include historical archival papers which are available to researchers and other interested parties through contact with the Pacific Salmon Commission's Librarian.

Publication of John F. Roos' History of the International Pacific Salmon Fisheries Commission, and P. Gilhousen's Estimation of Fraser River Sockeye Escapements ended all publication series of the International Pacific Salmon Fisheries Commission. Copies of all in-print Progress Reports and Bulletins of the International Pacific Salmon Fisheries Commission are available free of charge through the Library of the Pacific Salmon Commission. Copies of the History of the International Pacific Salmon Fisheries Commission may also be ordered through the Library of the Pacific Salmon Commission.

G. DOCUMENTS SUBMITTED BY THE PARTIES

In compliance with provisions of the Treaty, the Parties provide annual post-season fishery reports and updates on their respective salmonid enhancement programs to the Commission. Documents received during 2001/02 were:

1. *2001 Post Season Report for Canadian Treaty Limit Fisheries*. Canada Department of Fisheries and Oceans. November 30, 2001.
2. *2001 Post Season Report for United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty*. United States Section, Pacific Salmon Commission. December, 2001.
3. *2001 Update Report for the Salmonid Enhancement Program in British Columbia*. Fisheries and Oceans Canada. January, 2002.

Report of the Auditors for 2001/2002

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 2001 TO MARCH 31, 2002

Financial Statements of

PACIFIC SALMON COMMISSION

Years ended March 31, 2002 and 2001

AUDITORS' REPORT TO THE COMMISSIONERS

We have audited the statement of financial position of the Pacific Salmon Commission as at March 31, 2002 and the statements of financial activities and fund balances for the year then ended. These financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Commission, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 2002 and the results of its operations for the year then ended in accordance with the Financial Regulations of the Commission as described in note 2 to the financial statements.

Our audit was conducted for the purpose of forming an opinion on the basic financial statements taken as a whole. The current year's supplementary information included in Schedules 1 to 3 is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such supplementary information has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Chartered Accountants

New Westminster, Canada

May 17, 2002

PACIFIC SALMON COMMISSION

Statements of Financial Position

March 31, 2002 and 2001

	General Fund	Working Capital Fund	Test Fishing Fund	Special Research Fund	Capital Assets Fund	2002 Consolidated	2001 Consolidated
Assets							
Current assets:							
Cash and cash equivalents	$ 880,343	$ 87,037	$ 255,482	$ 13	$ -	$ 1,222,875	$ 745,360
Accounts receivable	62,233	-	-	-	-	62,233	21,021
Interest receivable	169	-	-	-	-	169	7,315
Prepaid expenses	14,329	-	-	-	-	14,329	19,669
	957,074	87,037	255,482	13	-	1,299,606	793,365
Accrued benefit asset	16,177	-	-	-	-	16,177	-
Capital assets (note 3)	-	-	-	-	228,637	228,637	222,271
	$ 973,251	$ 87,037	$ 255,482	$ 13	$ 228,637	$ 1,544,420	$ 1,015,636
Liabilities and Fund Balances							
Current liabilities:							
Accounts payable and accrued liabilities	$ 114,421	$ -	$ -	$ -	$ -	$ 114,421	$ 199,873
Deferred revenue	673,000	-	-	-	-	673,000	-
	787,421	-	-	-	-	787,421	199,873
Fund balance (note 4)	185,830	87,037	255,482	13	228,637	756,999	815,763
	$ 973,251	$ 87,037	$ 255,482	$ 13	$ 228,637	$ 1,544,420	$ 1,015,636

See accompanying notes to financial statements.

Approved on behalf of the Commission:

__"D. Petrachenko"_____ Chair, Standing Committee on Finance and Administration

__"R. Rousseau "_____ Vice-Chair, Standing Committee on Finance and Administration

PACIFIC SALMON COMMISSION

Statements of Financial Activities and Fund Balances

Years ended March 31, 2002 and 2001

	General Fund	Working Capital Fund	Test Fishing Fund	Special Research Fund	Capital Assets Fund	2002 Consolidated	2001 Consolidated
und balance, beginning of year	$ 393,492	$ 100,000	$ 50,000	$ 50,000	$ 222,271	$ 815,763	$ 721,695
evenue:							
Contributions from contracting parties	2,358,000	-		-	-	2,408,000	2,112,661
Interest	27,088	2,963		-	-	30,051	49,798
Gain on disposal of capital assets	825	-		-	-	825	(2,041)
Other	6,398	-		-	-	6,398	530
Test fishing	936,662	-		-	-	936,662	964,890
	3,328,973	2,963		50,000	222,271	3,381,936	3,125,838
xpenditures:							
Amortization	-	-	-	-	127,842	127,842	105,335
Salaries and employee benefits	1,780,064	-	-	-	-	1,780,064	1,766,263
Travel and transportation	109,945	-	-	-	-	109,945	114,708
Rents and communication	115,160	-	-	-	-	115,160	88,296
Printing and reproductions	2,850	-	-	-	-	2,850	10,116
Contract services	415,052	15,926	-	-	-	430,978	209,058
Materials and supplies	42,694	-	-	-	-	42,694	44,375
Test fishing	731,180	-	-	-	-	731,180	686,206
Meeting cost			-	99,987	-	99,987	7,413
	3,196,945	15,926	-	99,987	127,842	3,440,700	3,031,770
xcess (deficiency) of revenue over expenditures	132,028	(12,963)		(49,987)	(127,842)	(58,764)	94,068
ansfer to Test Fishing Fund	(205,482)	-	205,482	-	-	-	-
ansfer to Capital Asset Fund	(134,208)	-		-	134,208	-	-
und balance, end of year	$ 185,830	$ 87,037	$ 255,482	$ 13	$ 228,637	$ 756,999	$ 815,763

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

Years ended March 31, 2002 and 2001

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1. Nature of organization:

The Pacific Salmon Commission was established by Treaty between the Governments of Canada and the United States of America (the "Contracting Parties") to promote cooperation in the management, research and enhancement of Pacific salmon stocks. The Treaty was ratified on March 18, 1985 and the Commission commenced operations on September 26, 1985.

2. Significant accounting policies:

(a) Revenue recognition:

The Commission follows the restricted fund method of accounting for contributions from Contracting Parties. Externally restricted contributions are recognized as revenue in the year in which they are received and the related expenses are incurred. Unrestricted contributions or other income are recognized as revenue when the amount can be reasonably estimated and collection is reasonably assured.

(b) Fund accounting:

The Commission follows fund accounting procedures, giving recognition to restrictions on the use of resources specified by the Contracting Parties. The Fund classifications are as follows:

(i) The General Fund includes funds provided annually through contributions from the contracting parties and any net surplus obtained through the test fishing program. By agreement of the Parties, any unexpended balance remaining at the end of one fiscal year may be used to offset contributions in the following year or may be used to offset a shortfall between contributions and approved expenditures in the following year.

(ii) The Capital Assets Fund reflects the Commission's capital asset transactions. Amortization is charged to the Capital Fund.

(iii) The Working Capital Fund represents monies contributed by the Parties to be used temporarily pending receipt of new contributions from the Parties at the beginning of a fiscal year, or for special programs not contained in the regular budget but approved during the fiscal year. Any surplus above a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the General fund and is treated as income.

(iv) The Test Fishing Fund is established as a revolving fund in which a portion of net test fishing revenues realized in years of high abundance are reserved to be used to support test fishing programs in year of low abundance and when conservation concerns are an issue.

(v) The Special Research Fund represents monies set aside to fund additional programs to investigate problems of early arrival of late run Fraser River stocks.

2. Significant accounting policies (continued):

(c) Trust funds:

The Commission administers several trust funds, as described below:

(i) The Northern Boundary and Transboundary Rivers Restoration and Enhancement Trust Fund and the Southern Boundary Restoration and Enhancement Trust Fund reflect funding held in trust by the Commission. Accordingly, the trust funds' balances of activities for the year have been excluded from the Commission's financial statements. The income earned on these contributions is to be distributed by the Commission as directed by the Northern Enhancement Committee and the Southern Enhancement Committee. Schedules 1 and 2 provide details of these trust funds' balances and activities for the year.

(ii) The Yukon River Salmon Restoration and Enhancement Trust Fund reflects funding provided for a separate entity, the Yukon River Panel. Accordingly, the trust funds' balances of activities have been excluded from the Commission's financial statements. Schedule 3 provides details of the trust funds' balance and activities for the year.

(d) Basis of accounting:

The operations of the Commission are generally accounted for on an accrual basis except that purchase order expenditures are recognized at the time that the commitment for goods and services are made, rather than at the time that the goods or services are delivered.

(e) Portfolio investments:

Portfolio investments are recorded at lower of cost and permanent decline in market value.

(f) Capital assets:

Capital assets are stated at cost. Costs of repairs and replacements of a routine nature are charged as a current expenditure while those expenditures which improve or extend the useful life of the assets are capitalized. Amortization is provided using the straight-line method of rates sufficient to amortize the costs over the estimated useful lives of the assets. The rates of amortization used on an annual basis are:

Automobiles	20%
Boats	20%
Computer equipment and software	30%
Equipment	20%
Furniture and fixtures	10%
Leasehold improvements	10%

2. Significant accounting policies (continued):

(g) Income taxes:

The Commission is a non-taxable organization under the Privileges and Immunities (International Organizations) Act (Canada).

(h) Post employment benefits:

The Commission provides certain employee future benefits, including a defined benefit pension plan, which is funded by the Commission on an annual basis, and severance, life insurance and medical benefits, which are funded by the Commission as they become due.

The Commission accrues its obligations under employee benefit plans and the related costs as benefits are earned, net of returns on plan assets.

The Commission's policies are as follows:

(i) The cost of retirement benefits earned by employees is actuarially determined using the projected benefit method prorated on service and management's best estimate of expected plan investment performance, salary escalation and retirement ages of employees.

(ii) The expected interest cost on any prior service obligation is calculated using management's estimate for the long-term rate of return.

(iii) The expected return on plan assets is calculated at a market-related value for the assets.

(iv) Any cumulative unrecognized actuarial gains and losses in excess of 10% of the projected benefit obligation will be amortized over the expected average remaining service life of the employee group covered by the program.

(v) As at April 1, 2000, the Commission has an estimated transition asset of $26,854, which is being amortized over 15 years, which is the expected average remaining service life of the related employee group.

(i) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate prevailing at the transaction dates. Assets and liabilities denominated in foreign currency at the balance sheet date are translated to equivalent Canadian amounts at the current rate of exchange. Foreign exchange gains and losses resulting from translation are included in the determination of excess or deficiency of revenue over expenditures.

2. Significant accounting policies (continued):

(j) Use of estimates:

The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant areas requiring the use of management estimates relate to the determination of the valuation of accounts receivable, useful lives of capital assets for amortization and accrued liabilities. Actual results could differ from those estimates. Adjustments, if any, will be reflected in operations in the period of settlement.

(k) Statement of cash flows:

A statement of cash flows has not been provided as it would not provide any additional meaningful information.

3. Capital assets:

	Cost	Accumulated amortization	2002 Net book value	2001 Net book value
Automobiles	$ 157,524	$ 129,296	$ 28,228	$ 19,795
Boats	92,231	84,099	8,132	10,916
Computer equipment	520,515	452,180	68,335	40,779
Equipment	620,133	548,737	71,396	99,475
Furniture and fixtures	257,423	238,753	18,670	16,840
Computer software	128,012	122,478	5,534	3,757
Leasehold improvements	56,628	28,286	28,342	30,709
	$ 1,832,466	$ 1,603,829	$ 228,637	$ 222,271

4. General fund balance:

The Commission has approved a carryover of the unexpended funds in the General Fund to be utilized as follows:

	2002	2001
Continuing operations	$ 171,501	$ 373,823
Reserve for prepaid expenses	14,329	19,669
	$ 185,830	$ 393,492

5. Contracting parties:

The Commission's only related parties are the Contracting Parties.

During 2001, the Commission received contributions from Contracting Parties totaling $2,408,000 (2000: $2,112,661). The Commission made no expenditures on behalf of the Contracting Parties during the year.

6. Employee benefits:

The Commission has a defined benefit plan providing pension and other retirement and post-employment benefits to most of its employees. The amounts presented in this note are actuarial-determined projections:

	Pension Plan	
	2002	2001
Reconciliation of accrued benefit asset (obligation):		
Opening balance	$ (3,520,981)	$ (2,631,136)
Current service cost	(158,431)	(140,975)
Benefits paid	98,047	64,818
Interest cost	(241,971)	(230,448)
Reciprocal transfer	-	(583,240)
Ending balance	$ (3,823,336)	$ (3,520,981)

6. Employee benefit (continued):

	Pension Plan	
	2002	2001
Reconciliation of plan assets:		
Opening balance	$ 3,729,320	$ 2,657,995
Actual return on plan assets	149,915	417,081
Employer contributions	92,405	79,333
Employee contributions	66,026	61,642
Benefits	(98,047)	(64,818)
Reciprocal transfer	-	583,240
Adjustment	(2,549)	(5,153)
Ending balance	$ 3,937,070	$ 3,729,320
Fund status - surplus (deficit)	$ 113,734	$ 208,339
Unamortized transitional obligation and actuarial gain	(97,557)	(212,597)
Accrued benefit asset (liability)	$ 16,177	$ (4,258)
Discount rate	7%	7%
Expected long-term rate of return on plan assets	7%	7%

The plan asset portfolio currently comprises equity investments and debt. Equity investments are 74% of the portfolio and include Canadian, International and real estate investments. Debt is 26% of the portfolio and comprises short-term debt, bonds and mortgages. Asset mix is reviewed periodically and may vary in the future.

6. Employee benefits (continued):

The Commission's net benefit plan expense is as follows:

	2002	2001
Current service cost (less employee contributions)	$ 92,405	$ 79,333
Interest cost	241,971	230,448
Expected return on plan assets	(263,166)	(229,552)
Amortization of transitional asset, actuarial gains and losses	(1,790)	(1,790)
Actuarial adjustment	2,549	5,153
Net benefit plan expense	$ 71,969	$ 83,592

7. Financial instruments:

The financial instruments consist of cash and cash equivalents, bonds, equity securities, amounts receivable, interest receivable and amounts payable and accrued liabilities. The carrying amounts of these financial instruments are a reasonable estimate of their fair values.

PACIFIC SALMON COMMISSION

Statements of Trust Fund Balances and Activity — Schedule 1

Northern Boundary and Transboundary Rivers Restoration
and Enhancement Trust Fund
(stated in Canadian Funds)

March 31, 2002 and 2001

	2002	2001
Assets		
Cash and term deposits	$ 1,415,956	$ 191,649
Portfolio investments (market value - $76,288,752)	77,227,112	47,777,088
Interest receivable	1,884	-
	$ 78,644,952	$ 47,968,737
Liabilities		
Accounts payable and accrued liabilities	$ 47,799	$ 118,830
Fund balance	78,597,153	47,849,907
	$ 78,644,952	$ 47,968,737
Summary of Activity		
Fund balance, beginning of year	$ 47,849,907	$ 14,682,127
Revenue:		
Contribution	31,985,939	30,619,187
Interest earned on term deposit	12,444	992,251
Realized gain on investments	4,664	-
	79,852,954	46,293,565
Expenditures:		
Salaries and benefits	22,048	-
Travel and accommodation	19,282	28,215
Rents and communications	927	2,570
Contract services	269,512	109,026
Materials and supplies	3,423	-
	315,192	139,811
Net activity before foreign exchange adjustment	79,537,762	46,153,754
Foreign exchange gain (loss)	(940,609)	1,696,153
Fund balance, end of year	$ 78,597,153	$ 47,849,907

PACIFIC SALMON COMMISSION

Statements of Trust Fund Balances and Activity — Schedule 2

Southern Boundary Restoration and Enhancement Trust Fund
(stated in Canadian Funds)

March 31, 2002 and 2001

	2002	2001
Assets		
Cash and term deposits	$ 1,415,112	$ 194,714
Portfolio investments (market value - $76,301,524)	77,240,042	47,790,277
Interest receivable	1,884	-
	$ 78,657,038	$ 47,984,991
Liabilities		
Accounts payable and accrued liabilities	$ 47,799	$ 110,300
Fund balance	78,609,239	47,874,691
	$ 78,657,038	$ 47,984,991
Summary of Activity		
Fund balance, beginning of year	$ 47,874,691	$ 14,692,961
Revenue:		
Contributions	31,985,847	30,619,187
Interest earned on term deposit	12,445	986,878
Realized gain on investments	4,660	-
	79,877,643	46,299,026
Expenditures:		
Salaries and benefits	22,048	-
Travel and accommodation	10,897	12,821
Rents and communications	704	2,350
Contract services	275,242	106,562
Materials and supplies	3,423	-
	312,314	121,733
Net activity before foreign exchange	79,565,329	46,177,293
Foreign exchange gain (loss)	(956,090)	1,697,398
Fund balance, end of year	$ 78,609,239	$ 47,874,691

PACIFIC SALMON COMMISSION

Statements of Trust Fund Balances and Activity

Schedule 3

Yukon River Salmon Restoration and Enhancement Trust Fund
(stated in Canadian Funds)

March 31, 2002 and 2001

	2002	2001
Assets		
Cash and term deposits	$ -	$ -
Interest receivable	-	-
	$ -	$ -
Liabilities		
Accounts payable and accrued liabilities	$ -	$ -
Summary of Activity		
Fund balance, beginning of year	$ -	$ -
Revenue:		
Contributions	462,420	322,973
Expenditures:		
Transfers to the Yukon River Panel	462,420	322,973
Fund balance, end of year	$ -	$ -

Appendices

Appendix A

CORRESPONDENCE TO PARTIES REGARDING AN AGREEMENT REACHED BY THE PACIFIC SALMON COMMISSION IN FURTHERENCE OF CHAPTER 5 OF ANNEX IV, OF THE PACIFIC SALMON TREATY - "SOUTHERN COHO MANAGEMENT PLAN"

February 26, 2002

The Honorable Colin L. Powell
Secretary of State
U.S. Department of State
2201 C Street N.W.
Washington, D.C.
U.S.A. 20520

The Honorable Gale A. Norton
Secretary of Interior
U.S. Department of Interior
1849 C Street N.W.
Washington, D.C. 20240

The Honorable Donald Evans
Secretary of Commerce
U.S. Department of Commerce
14th Street & Constitution Avenue N.W.
Washington, D.C. 20230

The Honourable Robert Thibault
Minister
Fisheries and Oceans Canada
13th floor
Station 13228, 200 Kent Street
Ottawa, Ontario K1A 0E6

The Honourable William Graham
Minister
Foreign Affairs and International Trade
125 Sussex Drive
Lester B. Pearson Building
Ottawa, Ontario K1A 0G2

Dear Sir/Madam:

I have the honor/honour to report to you that understandings have been reached by the Pacific Salmon Commission in furtherance of Chapter 5 of Annex IV of the Pacific Salmon Treaty. This agreement is embodied in the enclosed "Southern Coho Management Plan," and would govern the conduct of certain coho salmon fisheries for the years 2002 – 2008.

The Commission expects that the relevant management agencies of each Party will manage fisheries under their respective responsibilities consistent with the Southern Coho Management Plan.

Sincerely yours,

PACIFIC SALMON COMMISSION

Larry Rutter
Chair

Encl.

Southern Coho Management Plan
adopted by the Pacific Salmon Commission pursuant to the 1999 Pacific Salmon Treaty Agreement

1. This Southern Coho Management Plan (Plan) represents the initial implementation of the provisions of Chapter 5 of Annex IV of the 1999 Agreement between the United States and Canada. This Plan specifies how the Parties' fisheries impacting coho salmon originating in southern British Columbia, Washington and Oregon will be managed, subject to future agreed technical refinements. The Parties agree to implement this Plan in their respective fisheries subject to such future agreed refinements.

2. Management Objectives. Consistent with the 1999 Agreement, this Plan is intended to meet the following objectives:

   (a) constrain total fishery exploitation to enable "key management units of naturally spawning coho stocks" (MUs) to produce maximum sustainable harvests (MSH) over the long term while maintaining the genetic and ecological diversity of the component populations;

   (b) improve long-term prospects for sustaining healthy fisheries in both countries;

   (c) establish an approach to fishery resource management which is responsive to resource status, cost-effective, and sufficiently flexible to utilize technical capabilities and information as they are developed and approved;

   (d) provide a predictable framework for planning fishery impacts on naturally spawning populations of coho; and,

   (e) establish an objective basis for monitoring, evaluating and modifying the management regimes as appropriate.

3. Unless otherwise agreed, the Parties shall:

   (a) establish and document the derivation of the following targets for MUs which originate within their respective jurisdictions:

      (i) the escapement goal or exploitation rate that achieves MSH; and

      (ii) exploitation rates for each of 3 status categories, *Low*, *Moderate* and *Abundant*. Each Party shall provide maximum exploitation rate targets for each MU which originates within its jurisdiction consistent with attainment of MSH and the ranges defined below:

Status	Total Exploitation Rate
Low	Up to 20 %
Moderate	21% - 40 %
Abundant	41% - 65 %

   (b) ensure that the level of exploitation is consistent with achieving maximum sustainable harvest (MSH) over the long-term for the MUs identified in Paragraph 5, below;

   (c) manage all fisheries under their respective jurisdictions, whether directed at coho or not, whether mark-selective or not, to ensure that:

(i) cumulative exploitation rates on MUs do not exceed the limits established by Paragraph 7 below;

(ii) additional fishery management measures are implemented by each Party as may be practicable and necessary to address conservation needs for component stocks of the MUs originating within its jurisdiction;

(d) maintain capabilities and programs as necessary to conduct stock assessments, evaluate fishery impacts, and meet the objectives of this Plan;

(e) improve coordination between their domestic management processes through regular bilateral preseason planning discussions at regularly scheduled Panel meetings and through timely bilateral information exchange among fishery managers.

4. This Plan establishes the basis for setting exploitation rate limits for Canadian and US fisheries on the MUs identified in Paragraph 5.

5. Cumulative exploitation rates shall be constrained for the following MUs in accordance with their annual status:

Southern B.C. Inside Management Units
- Interior Fraser (Including Thompson)
- Lower Fraser
- Strait of Georgia Mainland
- Strait of Georgia Vancouver Island

U.S. Inside Management Units
- Skagit
- Stillaguamish
- Snohomish
- Hood Canal
- Strait of Juan de Fuca

U.S. Outside Management Units
- Quillayute
- Hoh
- Queets
- Grays Harbor

6. Each year, the Parties shall, through their respective domestic processes, classify the status of each MU originating in their rivers as, *Low*, *Moderate* or *Abundant*, and provide any changes in maximum, status-dependent exploitation rates relative to those established pursuant to Paragraph 3(a)(ii). This information, along with the basis for such determinations, shall be provided to the other Party prior to the annual meeting of the PSC so it can be discussed within the Southern Panel and taken into account in domestic preseason planning processes and subsequent manager to manager discussions. During March, the respective managers of the Parties will exchange additional information relative to their progress in developing fishery management plans so as to improve coordination of preseason planning processes and facilitate implementation of this Agreement.

7. Each Party shall, preseason, plan its intercepting fisheries so that the total exploitation rates do not exceed the MU-specific exploitation rate caps specified below.

(a) The ER caps depicted in the tables presented below reflect the following general principles:

(i) For MUs in *low* status, both Parties shall be obligated to shape their fisheries to reduce the impact on those MUs. The producing Party is expected to bear a greater share of the conservation responsibility for MUs in *low* status, and in no case shall the intercepting Party be required to reduce its impact below a 10% exploitation rate, subject to actions that may be taken under Paragraph 9(b).

(ii) For MUs in *moderate* status, the producing Party should receive the majority of the allowable exploitation rate; this share should increase for MUs in *abundant* status.

(iii) Neither Party should be unduly prevented from accessing its own stocks to achieve its fishery objectives or harvesting other allocations agreed under the PST

(b) Canadian exploitation rate cap on U.S. Inside MUs (Tab 1):

Condition of US Inside MUs	**Canadian ER Caps**	**MU Applicability**
Normal Low (> 1 Inside MU low)	0.11	All MUs with Total ER $\leq$ 0.20
Composite Low (Only 1 Inside MU Low)	0.13	The MU with Total ER $\leq$ 0.20
Normal Moderate (> 1 Inside MU Moderate)	.124 + .13 x ER	All MUs with 0.20<Total ER $\leq$ 0.40
Composite Moderate (Only 1 Inside MU Moderate)	.134 + .13 x ER	The MU with 0.20<Total ER $\leq$ 0.40
Abundant	.084 + .28 x ER	MUs with 0.40<Total ER $\leq$ 0.60
Abundant	.024 + .38 x ER	MUs with 0.60 < Total ER

(c) Canadian exploitation rate cap on U.S. Outside MUs (Tab 2):

Condition of US Outside MUs	**Canadian ER Caps**	**MU Applicability**
Normal Low (> 1 Outside MU low)	0.10	All MUs with Total ER $\leq$ 0.20
Composite Low (Only 1 Outside MU Low)	0.12	The MU with Total ER $\leq$ 0.20
Normal Moderate (> 1 MU Outside Moderate)	.024 + .38 x ER	All MUs with 0.20<Total ER $\leq$ 0.40
Composite Moderate (Only 1 Outside MU Moderate)	.054 + .33 x ER	The MU with 0.20<Total ER $\leq$ 0.40
Abundant	.024 + .38 x ER	MUs with 0.40 < Total ER

(d) U.S. exploitation rate cap on Canadian MUs:

Condition of Canadian MUs	U.S. ER Caps	MU Applicability
Low	0.10	All MUs with Total ER $\leq$ 0.20
Moderate	0.12	All MUs with 0.20<Total ER $\leq$ 0.40
Abundant	0.15	MUs with 0.40<Total ER

(e) The Parties recognize that bilateral review of methodologies employed to establish target MU-specific status-dependent exploitation rates is desirable. The Parties agree to complete a bilateral review of exploitation rate targets through the Coho Technical Committee for the following MUs before January 2004: Skagit, Stillaguamish, Lower and Interior Fraser. Until such time as the review has been completed, the Parties agree that, for the purpose of computing ER caps under this paragraph, the exploitation rate target for the Skagit MU at moderate status is assumed to be 0.35 and the exploitation rate target for the Stillaguamish MU at abundant status is assumed to be 0.55. In the event that the bilateral review has not been completed by January 2004, the Parties will attempt to resolve remaining issues pertaining to the establishment of status dependent exploitation rate targets for the Skagit and Stillaguamish in the 2005 review provided under Paragraph 11.

(f) The Parties agree that the intercepting exploitation rate caps established for each Party under this paragraph are maximums. If, for any MU, the intercepting Party does not require the full exploitation rate cap to harvest its own stocks, that Party may elect to implement fishing plans that result in exploitation rates below the caps. Should this occur, the producing Party may plan fisheries to use the unused portion of the cap, provided that the cumulative exploitation rate limit established for that MU is not exceeded.

(g) To facilitate domestic fishery planning processes the Parties shall exchange, prior to mid-March of each year, information on the status of each MU covered by this agreement, the associated exploitation rate applicable to each MU and other factors that are relevant to the development of plans for their respective fisheries, including those that may result in domestic constraints below the ER caps specified herein.

(h) The Parties recognize that an agreed bilateral technical basis is necessary to develop and implement the terms and provisions of this Agreement. Toward this end, in establishing the specific values for the ER caps specified under this Agreement, the Parties have at this time relied upon U.S. estimates of the historical exploitation rates for the period encompassing 1986-1991 (attached as Appendix A).

(i) The Parties commit to joint development of preseason planning and post season evaluation tools and protocols in time for application in their respective 2004 preseason planning processes. In the event that the Parties determine that implementation experience and the bilateral planning tools and protocols indicate that the ER Caps specified in Paragraph 7(b)-(d) are inconsistent with the principles set forth in Paragraph 7(a), the Parties will undertake discussions to revise these ER caps in a manner that is consistent with those principles.

8. Compliance. Each year, the Coho Technical Committee shall review the results of the previous year's fisheries to determine the reasons underlying any instances in which the exploitation rate limits established pursuant to Paragraph 7 were exceeded, including effects of management error/imprecision. These results will be reported to the Southern Panel to discuss whether the regimes should be adjusted to meet the objectives of the coho agreement.

9. Each Party may:

   (a) shape fisheries to achieve a lower exploitation rate than the limits allowed under Paragraph 7 to address domestic management objectives;

   (b) request additional reductions in exploitation rates determined under Paragraph 7 to meet critical conservation concerns not adequately addressed by the Plan. The requesting Party must describe the measures taken in its own fisheries to respond to the conservation concern and make its request in a timely manner relative to pertinent management planning processes. The Southern Panel will discuss and explore ways in which agreement might be reached to accommodate the request;

   (c) request increases in the MU-specific exploitation rate caps determined under Paragraph 7 if the Party can demonstrate that the exploitation rate caps prevent it from accessing its own stocks to meet its fishery management objectives or from harvesting other allocations as provided under PST agreements. The Southern Panel will discuss and explore ways in which agreement might be reached to accommodate the request; and

   (d) request that the Coho Technical Committee evaluate the performance of the Plan and recommend measures to correct for systematic biases and potential improvements in the Plan to the Southern Panel.

10. To assist the Southern Panel, the Coho Technical Committee shall:

   (a) oversee the exchange of the Parties' determinations of the status of MUs and information on abundance and distributions of coho as available for the upcoming season, and review the technical basis of that information;

   (b) review exploitation rates that result from application of this Plan and advise the Southern Panel if impacts are excessive, given the status of affected MUs;

   (c) review total exploitation rate targets provided by the Parties for MUs and stocks of conservation concern which originate within their respective jurisdictions;

   (d) oversee the exchange of pre-season expectations and post-season estimates of MU-specific mortalities in the fisheries of each Party;

   (e) oversee the exchange of information regarding the conduct of mark-selective fisheries, including estimates of interceptions of mass-marked hatchery coho;

   (f) develop regional coho pre-season and post season evaluation tools and protocols to provide a consistent means of evaluating the cumulative impact of U.S. and Canadian fisheries on MUs and stocks of conservation concern;

   (g) undertake bilateral, technical review processes on:

(i) biologically determining the categorical status of MUs;

(ii) determining MSH levels and maximum, status-dependent exploitation rates, including derivation of risk buffers; and

(iii) criteria to define MUs.

11. The Parties agree that the Plan will remain in effect through 2008. A review of this Plan will occur no later than 2005. The review will include an assessment of the effectiveness of the Plan in achieving the management objectives of the Parties and any other issues either Party may wish to raise, including, but not limited to: (a) whether the exploitation rate caps established under Paragraph 7 have prevented either Party from accessing its own stocks to meet its fishery management objectives or from harvesting other allocations as provided under PST agreements; and (b) issues associated with the procedures and methods employed to estimate and account for total coho mortalities, including those incurred in mark-selective fisheries. The Plan will be refined, as required, based on the review and the need to incorporate results of bilateral technical developments (e.g., establishing criteria to define MUs and the basis for biologically determining allowable exploitation rates, developing a common methodology for measuring exploitation rates occurring in Canadian and U.S. fisheries, development of bilateral management planning tools, etc.).

12. Test fisheries sanctioned by the Fraser Panel of the Pacific Salmon Commission for purposes of providing information for the management of Fraser sockeye and pink salmon are to be conducted in a manner that minimizes coho by-catch mortalities.

Table 1. Canadian ER Caps on U.S. INSIDE MUs

	Total ER for U.S. MU	Canadian ER Cap		Canadian Share of Total ER	
		Normal	Composite	Normal	Composite
	0.10	0.110	0.130	110%	130%
	0.11	0.110	0.130	100%	118%
	0.12	0.110	0.130	92%	108%
	0.13	0.110	0.130	85%	100%
LOW	0.14	0.110	0.130	79%	93%
	0.15	0.110	0.130	73%	87%
	0.16	0.110	0.130	69%	81%
	0.17	0.110	0.130	65%	76%
	0.18	0.110	0.130	61%	72%
	0.19	0.110	0.130	58%	68%
	0.20	0.110	0.130	55%	65%
	0.21	0.151	0.161	72%	77%
	0.22	0.153	0.163	69%	74%
	0.23	0.154	0.164	67%	71%
	0.24	0.155	0.165	65%	69%
	0.25	0.157	0.167	63%	67%
	0.26	0.158	0.168	61%	65%
	0.27	0.159	0.169	59%	63%
	0.28	0.160	0.170	57%	61%
	0.29	0.162	0.172	56%	59%
MODERATE	0.30	0.163	0.173	54%	58%
	0.31	0.164	0.174	53%	56%
	0.32	0.166	0.176	52%	55%
	0.33	0.167	0.177	51%	54%
	0.34	0.168	0.178	49%	52%
	0.35	0.170	0.180	48%	51%
	0.36	0.171	0.181	47%	50%
	0.37	0.172	0.182	47%	49%
	0.38	0.173	0.183	46%	48%
	0.39	0.175	0.185	45%	47%
	0.40	0.176	0.186	44%	47%

Table 1. Canadian ER Caps on U.S. INSIDE MUs - continued

	Total ER for U.S. MU	Canadian ER Cap	Canadian Share of Total ER
	0.41	0.199	48%
	0.42	0.202	48%
	0.43	0.204	48%
	0.44	0.207	47%
	0.45	0.210	47%
	0.46	0.213	46%
	0.47	0.216	46%
	0.48	0.218	46%
	0.49	0.221	45%
	0.50	0.224	45%
	0.51	0.227	44%
	0.52	0.230	44%
	0.53	0.232	44%
	0.54	0.235	44%
ABUNDANT	0.55	0.238	43%
	0.56	0.241	43%
	0.57	0.244	43%
	0.58	0.246	42%
	0.59	0.249	42%
	0.60	0.252	42%
	0.61	0.256	42%
	0.62	0.260	42%
	0.63	0.263	42%
	0.64	0.267	42%
	0.65	0.271	42%

Table 2. Canadian ER Caps on U.S. OUTSIDE MUs

	Total ER for U.S. MU	Canadian ER Cap		Canadian Share of Total ER	
		Normal	Composite	Normal	Composite
	0.10	0.100	0.120	100%	120%
	0.11	0.100	0.120	91%	109%
	0.12	0.100	0.120	83%	100%
	0.13	0.100	0.120	77%	92%
LOW	0.14	0.100	0.120	71%	86%
	0.15	0.100	0.120	67%	80%
	0.16	0.100	0.120	63%	75%
	0.17	0.100	0.120	59%	71%
	0.18	0.100	0.120	56%	67%
	0.19	0.100	0.120	53%	63%
	0.20	0.100	0.120	50%	60%

Table 2. Canadian ER Caps on U.S. OUTSIDE MUs - continued

	Total ER for U.S. MU	Canadian ER Cap		Canadian Share of Total ER	
		Normal	Composite	Normal	Composite
	0.21	0.104	0.123	49%	59%
	0.22	0.108	0.127	49%	58%
	0.23	0.111	0.130	48%	56%
	0.24	0.115	0.133	48%	56%
	0.25	0.119	0.137	48%	55%
	0.26	0.123	0.140	47%	54%
	0.27	0.127	0.143	47%	53%
	0.28	0.130	0.146	47%	52%
	0.29	0.134	0.150	46%	52%
MODERATE	0.30	0.138	0.153	46%	51%
	0.31	0.142	0.156	46%	50%
	0.32	0.146	0.160	46%	50%
	0.33	0.149	0.163	45%	49%
	0.34	0.153	0.166	45%	49%
	0.35	0.157	0.170	45%	48%
	0.36	0.161	0.173	45%	48%
	0.37	0.165	0.176	44%	48%
	0.38	0.168	0.179	44%	47%
	0.39	0.172	0.183	44%	47%
	0.40	0.176	0.186	44%	47%
	0.41	0.180		44%	
	0.42	0.202		48%	
	0.43	0.204		48%	
	0.44	0.207		47%	
	0.45	0.210		47%	
	0.46	0.213		46%	
	0.47	0.216		46%	
	0.48	0.218		46%	
	0.49	0.221		45%	
	0.50	0.224		45%	
	0.51	0.227		44%	
	0.52	0.230		44%	
	0.53	0.232		44%	
	0.54	0.235		44%	
ABUNDANT	0.55	0.238		43%	
	0.56	0.241		43%	
	0.57	0.244		43%	
	0.58	0.246		42%	
	0.59	0.249		42%	
	0.60	0.252		42%	
	0.61	0.256		42%	
	0.62	0.260		42%	
	0.63	0.263		42%	
	0.64	0.267		42%	
	0.65	0.271		42%	

Appendix Table A. Average (1986-1991) exploitation rates by management unit used in this agreement, summarized from annual data detail (incorporated by reference).

		Canadian Fisheries				US Fisheries				Total
	Management Unit	CA JDF	CA Other	St. of Georgia	WCVI	N. of Falcon	US JDF	US Other	San Juan Islands	
Canada	St of Georgia Mainland	0.058	0.052	0.405	0.151	0.012	0.018	0.005	0.034	0.735
	St of Georgia Vancouver Is	0.037	0.210	0.292	0.200	0.005	0.012	0.002	0.017	0.774
	Lower Fraser	0.044	0.058	0.315	0.238	0.014	0.019	0.006	0.041	0.735
	Interior Fraser / Thompson	0.045	0.066	0.132	0.300	0.026	0.028	0.027	0.048	0.674
US inside	St. Juan de Fuca	0.031	0.021	0.003	0.400	0.029	0.112	0.199	0.002	0.798
	Skagit	0.062	0.009	0.041	0.245	0.033	0.050	0.157	0.010	0.606
	Stillaguamish/Snohomish	0.061	0.013	0.005	0.373	0.038	0.060	0.253	0.006	0.809
	Hood Canal	0.066	0.012	0.004	0.381	0.045	0.089	0.290	0.004	0.890
US outside	Gray Harbour	0.006	0.033	0.000	0.240	0.041	0.007	0.313	0.000	0.641
	Hoh River	0.009	0.035	0.001	0.363	0.091	0.016	0.214	0.000	0.728
	Queets	0.012	0.024	0.000	0.307	0.085	0.010	0.317	0.001	0.757
	Quillayute	0.020	0.017	0.000	0.370	0.089	0.020	0.218	0.001	0.734

Appendix B

APPOINTMENT OF OFFICERS FOR 2001/2002

Effective December 1, 2001, a new slate of officers for the Pacific Salmon Commission was identified as follows:

(a)	Commission Chair	U.S.	Larry Rutter
(b)	Commission Vice-Chair	Can	Donna Petrachenko
(c)	Fraser River Panel Chair	U.S.	Rich Lincoln
(d)	Fraser River Panel Vice-Chair	Can	Wayne Saito
(e)	Northern Panel Chair	U.S.	Dave Gaudet
(f)	Northern Panel Vice-Chair	Can.	Dave Einarson
(g)	Southern Panel Chair	Can.	Greg Savard
(h)	Southern Panel Vice-Chair	U.S.	Terry Williams
(i)	Transboundary Panel Chair	Can.	Gord Zealand
(j)	Transboundary Panel Vice-Chair	U.S.	Andrew McGregor
(k)	Stan. Comm. on F&A - Chair	U.S.	Rollie Rousseau
(l)	Stan. Comm. on F&A - Vice-Chair	Can.	Donna Petrachenko
(m)	Stan. Comm. on Scientific Cooperation - Chair	Can.	Laura Richards
(n)	Stan. Comm. on Scientific Cooperation - Vice-Chair	U.S.	Steve Pennoyer

Appendix C

APPROVED BUDGET FY 2002/2003

		Nov 1/01
1	**INCOME**	
A.	Contribution from Canada	$1,346,738
B.	Contribution from U.S.	1,346,738
	Sub total	2,693,476
C.	Carry-over from 2001/2002	90,000
D.	Interest	15,000
E.	Other income	-
F.	Total Income	$2,798,476
2	**EXPENDITURES**	
A.	1. Permanent Salaries and Benefits	$1,675,491
	2. Temporary Salaries and Benefits	280,516
	3. Total Salaries and Benefits	1,956,007
B.	Travel	103,723
C.	Rents, Communications, Utilities	119,685
D.	Printing and Publications	16,300
E.	Contractual Services	417,583
F.	Supplies and Materials	62,218
G.	Equipment	122,960
J.	Total Expenditures	$2,798,476
3	**BALANCE (DEFICIT)**	$(0)
4	**TEST FISHING PROGRAM**	
A.	Forecast Revenues	$660,866
B.	Forecast Expenditures	597,657
C.	Forecast Balance	$63,209
5	**TOTAL BALANCE (DEFICIT)**	$63,209

Appendix D

PACIFIC SALMON COMMISSION SECRETARIAT STAFF AS OF MARCH 31, 2002

EXECUTIVE OFFICE

Don Kowal
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Shelley Schnurr (to March 1, 2002)
Secretary (term)

Janice Bakas (from March 4, 2002)
Secretary

Vicki Ryall
Meeting Planner

Kathy Mulholland
IT Manager

Sandi Wadley
IT Support Specialist

FINANCE & ADMINISTRATION

Kenneth N. Medlock
Finance and Administration

Bonnie Dalziel
Accountant

Angus Mackay
Fund Coordinator

FISHERY MANAGEMENT

James C. Woodey
Chief Biologist

Jim Gable
Head, Racial Identification Group

Mike Lapointe
Project Biologist, Sockeye

Bruce White
Project Biologist, Pinks

Keith Forrest
Racial Data Biologist

Maxine Reichardt
Senior Scale Analyst

Julie Volk
Assistant Scale Analyst

Holly Anozie
Scale Lab Assistant

Jim Cave
Head, Stock Monitoring Group

Peter Cheng
Project Biologist, Acoustics

Ian Guthrie
Head, Biometrics

Yunbo Xie
Hydroacoustics Scientist

Andrew Gray
Hydroacoustics Biologist

Fiona Martens
Hydroacoustic Technician (term)

Christine Tovey
Test Fishing Biologist

Appendix E

MEMBERSHIP LISTS FOR STANDING COMMITTEES, PANELS, JOINT TECHNICAL COMMITTEES AND OTHER APPOINTMENTS AS OF MARCH 31, 2002

UNITED STATES	CANADA

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

Rollie Rousseau (Chair)	Donna Petrachenko (Vice-Chair)
Ron Allen	Dave Innell
Kevin Duffy	Alan Boreham
James Heffernan	
Charles K. Walters	
Penny Williams	

Staff: D. Kowal (ex. officio)

Editorial Board

Mr. Charles K. Walters	Mr. Tim Young

Staff: D. Kowal (ex. officio)

2. FRASER RIVER PANEL

Richard Lincoln (Chair)	Wayne Saito (Vice-Chair)
Dave Cantillon	Murray Chatwin
Robert F. Kehoe	Mike Griswold
Lorraine Loomis	Terry Lubzinski
	Susan McKamey
	Larry Wick

Fraser River Panel Alternates

Ronald G. Charles	Brian Assu
John R. Giard	William Otway
Patrick Pattillo	Les Rombough
William L. Robinson	Paul Ryall
	Peter Sakich

3. SOUTHERN PANEL

Terry R. Williams (Chair)
Burnell Bohn
Peter Dygert
James E. Harp
Patrick Pattillo
Keith E. Wilkinson

Ed Lochbaum (Vice-Chair)
John Legate
Don Hall
Jeremy Maynard
John Sutcliffe

Southern Panel Alternates

Larry Carpenter
Richard Lincoln
Guy Norman
Randy A. Settler
Robert Wunderlich

Errol Sam
Randy Brahniuk
Marilyn Murphy
Bill Pirie
Stan Watterson

4. NORTHERN PANEL

Dave Gaudet (Chair)
William F. Auger
James E. Bacon
William Foster
William Hines
Howard Pendell

Dave Einarson (Vice-Chair)
Bill DeGrief
John Murray
John McCulloch
Greg Taylor
Chris Barnes

Northern Panel Alternates

Arnold Enge
Andrew W. Ebona
Jack Helle
Dennis Longstreth
Robert M. Thorstenson

John Brockley
Harry Nyce Sr.
Deborah Jeffrey
Rick Haugan
Pat Moss
Bruce Shepherd

5. TRANSBOUNDARY PANEL

Andrew McGregor (Co-Chair)
James Becker
Andrew Ebona
Arnold Enge
William Hines
Stanley D. Malcom
Richard Davis

Gordon Zealand (Co-Chair)
Ronald Chambers
Stephan Jacobs
Ray Kendell
Yvonne Tashoots
John Ward

6. STANDING COMMITTEE ON SCIENTIFIC COOPERATION

Steve Pennoyer (Vice-Chair)
David Hankin

Laura Richards (Chair)
Dick Beamish

7. NORTHERN FUND COMMITTEE

Jim Balsiger (Co-Chair)
Kevin Duffy
Jev Shelton
John Lubar (Co-Chair)
Ron Fowler
Gordon Zealand

8. SOUTHERN FUND COMMITTEE

Rollie Rousseau (Co-Chair)
Larry Rutter
Arthur Taylor, Jr.
Ron Kadowaki (Co-Chair)
Don Hall
William Otway

9. JOINT CHINOOK TECHNICAL COMMITTEE

Dell Simmons (Co-Chair)
David Bernard
John Carlile
John H. Clark
Gary R. Freitag
Pam Goodman
Edgar Jones
Robert Kope
Brian Lynch
Marianne McClure
Scott McPherson
Scott Marshall
Gregg Mauser
Gary S. Morishima
James F. Packer
Joseph Polos
Rishi Sharma
Alex C. Wertheimer
Ronald H. Williams
Henry J. Yuen
Shijie Zhou
Rick McNicol (Co-Chair)
Gayle Brown
Wilf Luedke
Karin Mathias
Chuck Parken
Brian Riddell (until March 31, 2002)
Julian Sturhahn
Arlene Tompkins
Ivan Winther

10. JOINT COHO TECHNICAL COMMITTEE

Gary S. Morishima (Co-Chair)
Carrie Cook-Tabor
John Fieberg
Robert A. Hayman
Jeff Haymes
Peter W. Lawson
James B. Scott
Sam Sharr
Wilf Luedke (Co-Chair)
Richard Bailey
Diana Dobson
Blair Holtby
Karin Mathias
Chuck Parken

(**Northern Coho**)

John H. Clark
Michele Masuda
Leon D. Shaul
Kent Simpson
Melanie Sullivan
Joe Tadey
Arlene Tompkins
Pieter Van Will

11. JOINT CHUM TECHNICAL COMMITTEE

Gary R. Graves (Co-Chair)
Steven N. Boessow
Nick Lampsakis
Thomas Kane
Gary Winans
Leroy Hop Wo (Co-Chair)
Wilf Luedke
Clyde Murray
Melanie Sullivan
Pieter Van Will

12. JOINT DATA SHARING TECHNICAL COMMITTEE

Norma Jean Sands (Co-Chair)
Ken Johnson
Ron Josephson
Mike Matylewich
Gary S. Morishima
Dick O'Connor
Mrs. Amy Seiders
Marc Hamer (Co-Chair)
Lia Bijsterveld
Sue Lehmann

Working Group on Data Standards

P. Brodie Cox
Ken Johnson
William Johnson
John Leppink
Ken Phillipson
Marc Hamer (Co-Chair)
Brenda Adkins
Kathryn Fraser

13. JOINT FRASER RIVER PANEL TECHNICAL COMMITTEE

Michael Grayum (Co-Chair)
Angelika Hagen-Breaux
Keith C. Schultz
Les Jantz (Co-Chair)
Jeff Grout
Alan Cass
Ron Goruk
Mike Staley

14. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

Glen Oliver (Co-Chair)
Phillip S. Doherty
Gary R. Freitag
Jerome J. Pella
Paul Suchanek
Tim Zadina
Xinxian Zhang
David Peacock (Co-Chair)
Dana Atagi
Mark Potyrala
Steve Cox-Rogers

15. JOINT SELECTIVE FISHERY EVALUATION COMMITTEE

Gary S. Morishima (Co-Chair)
Carrie Cook-Tabor
John Fieberg
Harold Geiger
Jay Hensleigh
Annette Hoffmann
Ken Johnson
Ron Josephson
Ron Olson
Patrick Pattillo
Norma Jean Sands
Rishi Sharma
Dell Simmons
Brent Hargreaves (Co-Chair)
Sue Lehmann

16. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Scott Kelley (Co-Chair)
Jim Andel
William R. Bergmann
Craig Farrington
Ryan Hardy
Kathleen A. Jensen
Edgar Jones
Keith Pahlke
Gordon Wood
Sandy Johnston (Co-Chair)
Ian Boyce
Pete Etherton
Rick Ferguson
Bill Waugh

Enhancement Sub-Committee

Ron Josephson (Co-Chair)
Kevin Monagle
Eric Prestegard
Steve Reifenstuhl
Pat Milligan (Co-Chair)
Kim Hyatt
Paul Rankin

17. NATIONAL CORRESPONDENTS

Mr. Charles K. Walters
Mr. Tim Young